# ENGINEERING NEWS-RECORD

What a place to build a railroad p.34

A McGRAW-HILL PUBLICATION

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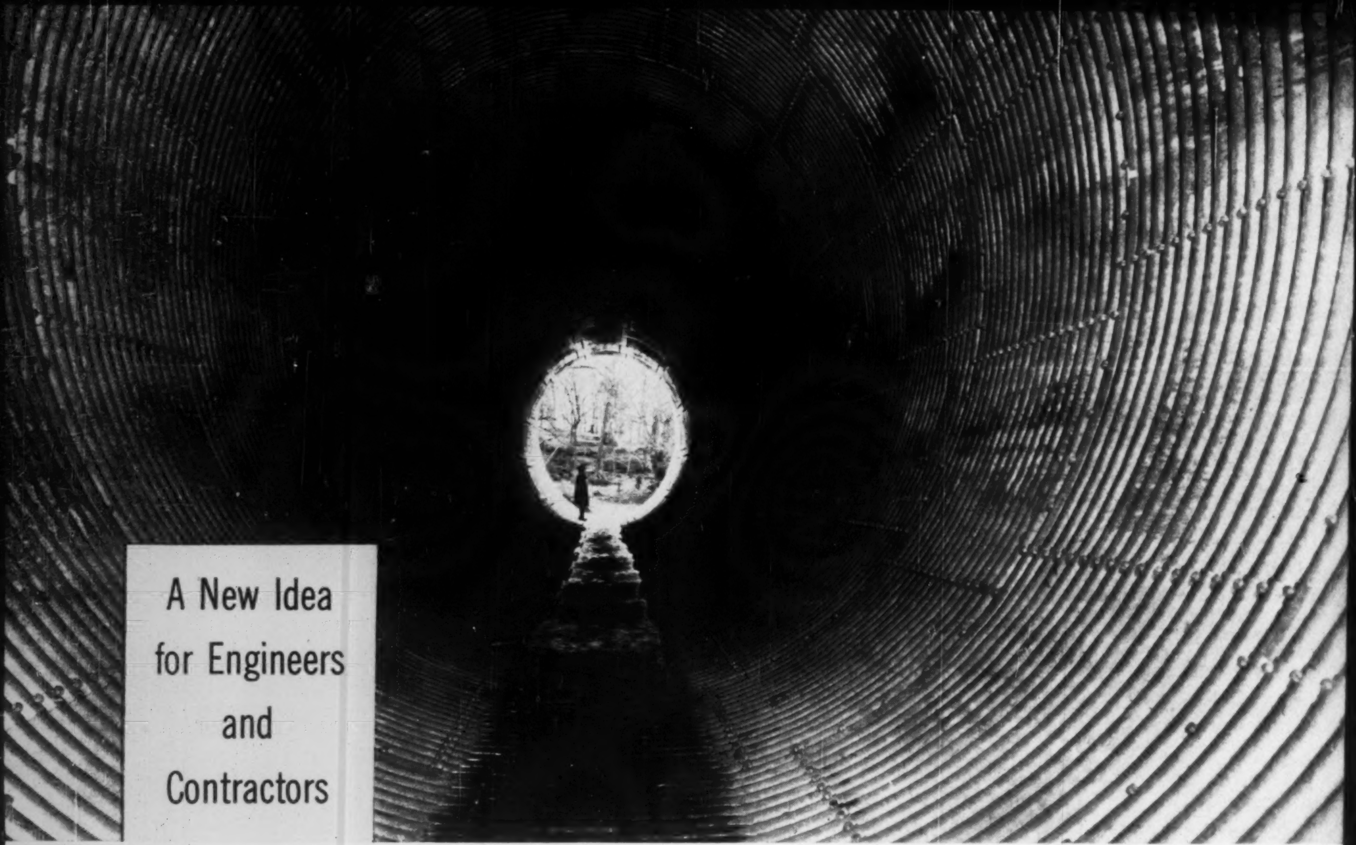

# Giant Armco Pipe Replaces Old Bridge

Corrugated metal drainage structures are now being built *larger* and *lighter* than ever before thought possible. The method, calling for the corrugated metal conduit to act as a compression ring, has evolved from Armco's extensive laboratory research and almost 60 years of field experience. This method *greatly reduces costs!*

In this specific case, an 18-foot diameter, 7 and 10 gage Armco MULTI-PLATE® structure—much lighter than shown in present gage tables—replaced an old county bridge in Ohio.

How was this designed and installed? A full report, presented to the Highway Research Board in Washington, D. C., this year, outlines the methods used. A copy of this report, "The Corrugated Metal Conduit as a Compression Ring," is yours for the asking. Just send in the coupon. Armco Drainage & Metal Products, Inc., 6980 Curtis Street, Middletown, Ohio.

New steels are born at Armco

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Toggle-type controls will convince you that Allis-Chalmers motor graders are built to benefit *you* . . . the best way possible. They're available only on the 127-hp *45* and 80-hp *145*.

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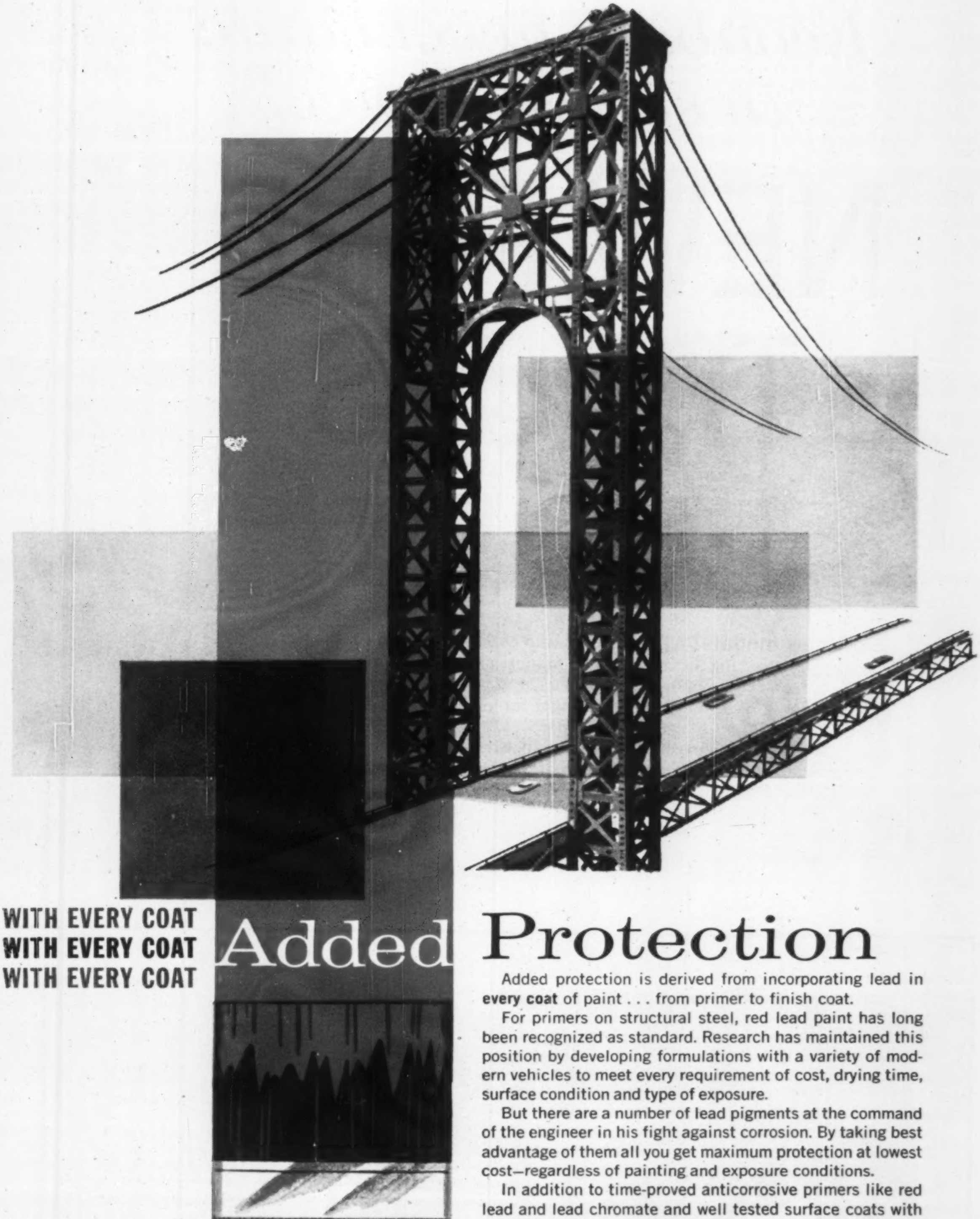

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**WITH EVERY COAT**
**WITH EVERY COAT**

# Added Protection

Added protection is derived from incorporating lead in **every coat** of paint . . . from primer to finish coat.

For primers on structural steel, red lead paint has long been recognized as standard. Research has maintained this position by developing formulations with a variety of modern vehicles to meet every requirement of cost, drying time, surface condition and type of exposure.

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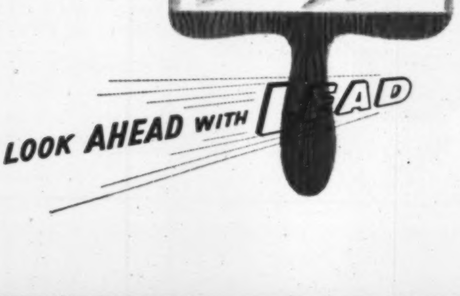
In addition to time-proved anticorrosive primers like red lead and lead chromate and well tested surface coats with great durability when exposed to the weather like white lead and international orange, research has developed such pigments as the basic lead silico-chromate with interesting properties worth investigating.

Remember: Now you can get extra protection against corrosion by using the properly formulated lead pigmented paint **every coat** of the way. For information contact the Lead Industries Association, 292 Madison Avenue, New York 17, New York.



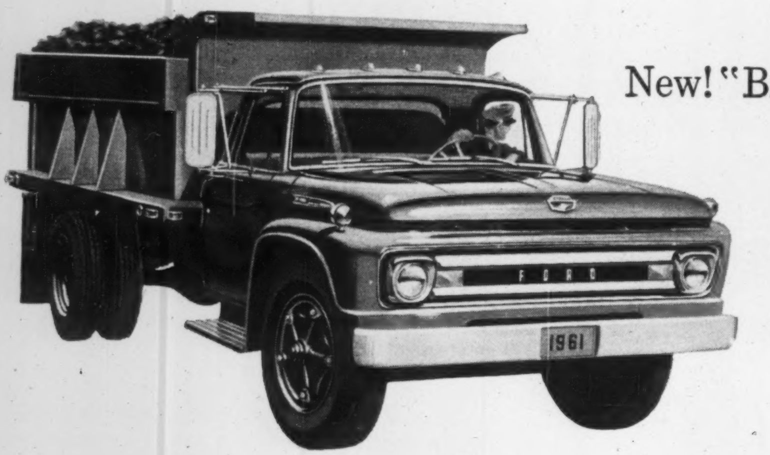
2877

*Economy never came in such a choice!*

# NEW FORD TRUCKS

## FOR 1961

**619 new models!** All engineered with one idea in mind . . . economy! New "Big Six" engine for 2-tonners plus five Cummins diesels for the new H-Series tractors expand the proven line of Ford engines to 18—with one just right for your job. A wider-than-ever choice of transmissions and axles! And . . . on all 1961 Ford Trucks, each part, except tires and tubes, is now warranted by your dealer against defects in material and workmanship for 12 months or 12,000 miles, whichever occurs first. The warranty does not apply, of course, to normal maintenance service or to the replacement in normal maintenance of parts such as filters, spark plugs and ignition points.



### New! "Big Six" Engine

More power for America's savingest 2-tonners . . . a big 262-cu. in. Six with the performance of big displacement, the durability of heavy-duty construction, plus the gas economy of 6-cylinder design! Available early 1961. You also get improved riding comfort with new smoother-acting springs and a sturdy front suspension that can give up to twice the tire life of other makes.

# Now! 100,000-Mile or 24-Month Warranty on Ford Truck Super Duty Gas Engines

New 100,000-mile warranty on Super Duty V-8 gas engines is most liberal in the industry. On 401-, 477- and 534-cubic-inch V-8's, Ford Dealers will replace any major engine part (including block, heads, crankshaft, bearings, valves, pistons, rings) found to be defective in materials and workmanship in normal on-highway use. Warranty covers full cost of replacement parts for 100,000 miles or 24 months, whichever occurs first . . . full labor costs for first year or 50,000 miles, sliding percentage scale thereafter.

# New! Styleside Pickups

Ford's Styleside Pickups, with 6½- and 8-foot bodies offer greater loadspace for '61—as much as 16% more! New one-piece cab-body design on longer wheelbases gives new comfort, greater durability. They're big in savings—as proved in certified studies of gas mileage and tire life. They're big in every way except in price—in fact, they're priced* as much as $157 below other comparable pickups!

*Based on a comparison of latest available manufacturers' suggested retail delivered prices

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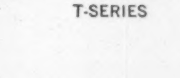
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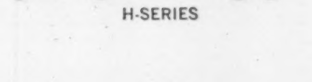
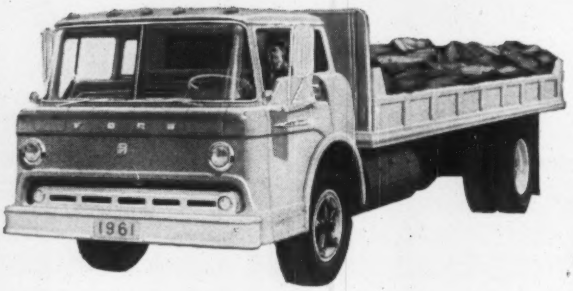

H-SERIES

**TURN PAGE FOR MORE NEWS ABOUT 1961 FORD TRUCKS**

# FOR 1961 FORD TRUCKS

## New! Space-Saving Tilts

Ford's popular Tilt Cab Series outsells all other makes and for good reason! Compact 82-inch BBC permits longer bodies for a given over-all length, and wide-track front axle makes it more maneuverable for congested area work. Simplified tilting mechanism exposes entire engine for money-saving ease of servicing. Ford offers the lowest-priced* tilt-cab model in the industry!



## New! 4-Wheel Drive Pickups

Ford offers the lowest-priced* 4 x 4 with big 8-ft. box. And these models have the getup and traction to go most anywhere . . . road or no road! You can choose the gas-saving 135-hp Six, or the 160-hp V-8 that gives extra power and smoothness with "six-like" economy.

## New! Durable Tandems

Ford's Tandem Axle trucks for '61 are engineered to give you greater flexibility and significant payload advancements. Your choice of 22,000-lb., 28,000-lb., 30,000-lb., 34,000-lb., or 38,000-lb. axle capacity. New, longer wheelbases are available to permit installation of special bodies up to 21 feet long. Aluminum walking beams as well as aluminum wheels and gas tanks are optional to keep chassis weights low and payloads high.

FORD
Econoline

## New! Econoline Pickup

Modern cab-forward design pares away 1,000 lb. of dead weight, yet you get as much payload capacity as standard ½-tonners! It's three feet shorter, yet there's a big 7-ft. box with 73 cu. ft. of load-space! You get lively performance and proven gas economy with the popular Falcon Six. And, the best news, Ford's Econoline Pickup is America's lowest-priced* pickup—bar none!

## New! Falcon Pickup

Ford's Falcon Ranchero is priced* as much as $231 less than leading conventional pickups—but initial cost is just the beginning of your savings! Certified tests by independent experts show gas mileage with the 85-hp Six as high as 30.5 mpg. You only change oil every 4,000 miles, and aluminized mufflers last up to three times as long. New, high-performance 101-hp Six is optional.

*Based on a comparison of latest available manufacturers' suggested retail delivered prices*

# OFFER YOU GREATER ECONOMY AND DURABILITY IN EVERY WEIGHT CLASS

## New! Super Duty Extra Heavies

Ford's Extra Heavies are built for unprecedented durability! Double-channel frames for truck models and single-channel frames of high-tensile steel for tractor models have been designed to provide proper strength with minimum weight. Huskier axles, wider power train choice, short 28-inch front axle setting, plus new high-durability cabs and sheet metal are typical of the advancements that add up to greater earning power for you.

## New! Diesel- or Gasoline-Powered Tractors

Ford's new H-Series tractors with 28-inch front axle setting and 82-inch BBC are offered in four diesel and four gasoline models with over 500 engine-axle-transmission combinations. Pull longer trailers and bigger payloads! Choose from ten industry-accepted engines—five Cummins diesels and five Ford Super Duty V-8's!

HEAVY TRUCK GENUINE PARTS Ford SERVICE DIESEL

**NATIONWIDE SERVICE . . .** *look for this sign at Ford Dealers' across the country, for service on all Ford gas and diesel trucks!*

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FORD DIVISION, Ford Motor Company,

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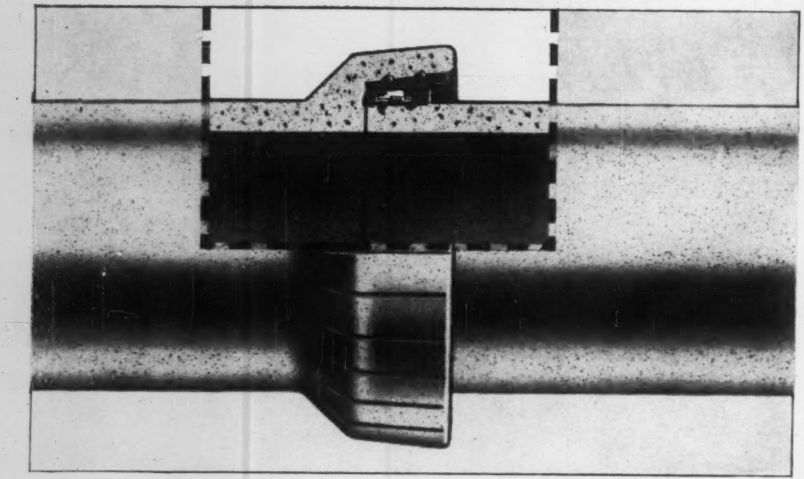
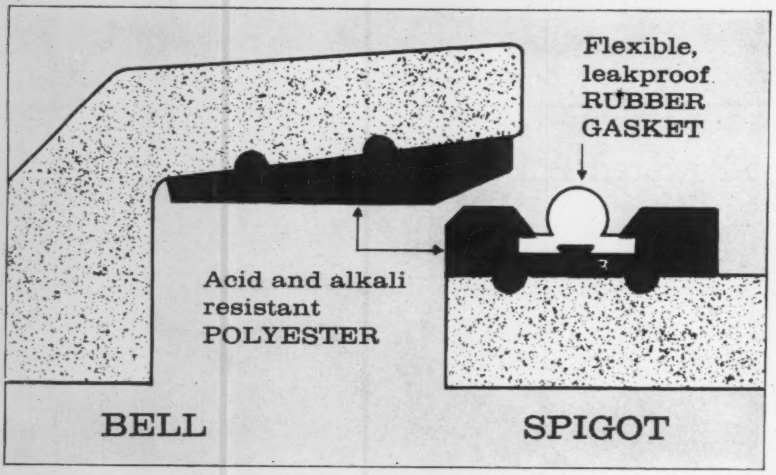


STRONGEST



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The self-aligning, easily-coupled joint on Natco Vitri-Seal clay pipe has a flexible rubber gasket that retains a tight seal all around the socket – even under the very highest shear stresses. Conforms to all A.S.T.M. requirements.

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## *Reader Comment*

### Reviewing the Reviewer

SIR—From the review of "Statically Indeterminate Structures," by Samuel Napp (ENR Apr. 16, 1959, p. 26) I gained the impression that the book had relatively little new information for the structural engineer. When one considers that many books have been written on indeterminate structures and that each duplicates the other to a very large extent, the reviewer's statement would seem credulent. Mr. Napp's book, however, is not just another collection of explanations of the various theories and methods of analysis for indeterminate structures; such as are found in textbooks.

The author presents a novel method of analysis, which he calls the Method of the Angular Rotation or the Method of the Modified Angular Rotation. It is in effect a modification of the Moment Area Method.

The basic concept of the method is brought into focus in the first few pages of the book, and from there on the author presents a multitude of problems worked out in detail. Many types of frames are analyzed, with large, clear illustrations showing in detail the geometry involved and moment diagrams for each type of frame under various loadings, thereby presenting the reader with a clear picture of the actual physical behavior of each structure analyzed.

The advantage of Mr. Napp's method is that it simplifies the development of formulas and reduces the number of simultaneous equations involved. All formulas are obtained simply by using geometry.

Mr. Napp was a structural consultant for a great number of years. In studying his book, one can benefit from the experience of an engineer who actually applied his method in design of many structures.

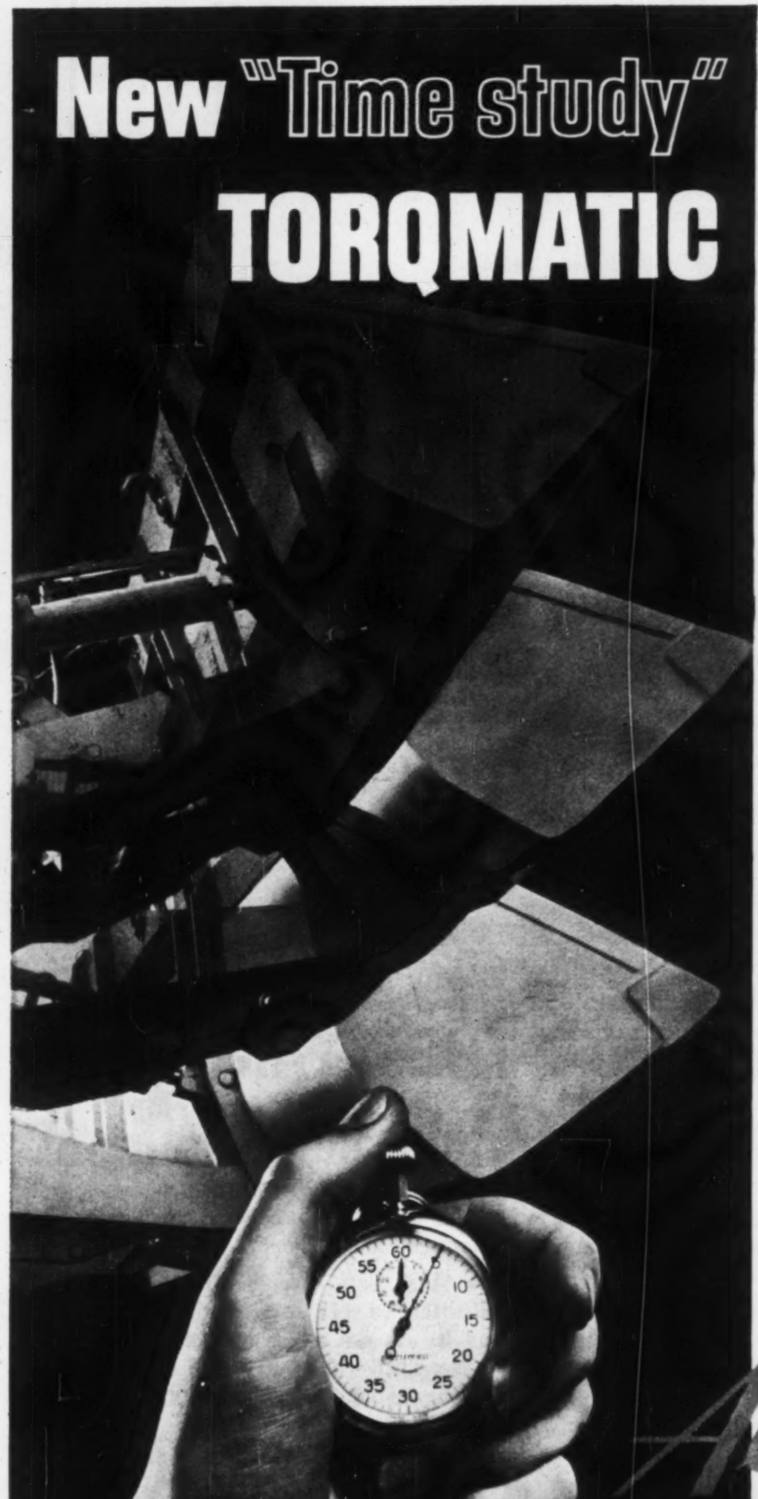
FRANK TAFFEL
*Consulting Engineer*
*Greenhut & Taffel*
*New York, N. Y.*

**Editor's note:** The reviewer believed Mr. Napp's method not as convenient for manual computations as several other methods, including some forms of moment distribution, but suggested that it should be studied for possible use with electronic computers.

*(Reader Comment continued p. 14)*

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

# New "Time study" TORQMATIC 3-SPEED



## handles bigger loader power—speeds bigger loader jobs

Here's the new, more powerful hydraulic transmission loaders have long needed—the CRT-3531 "Time-Study" TORQMATIC 3-Speed.

Built for bigger jobs, it can handle 350 ft.-lbs. of engine torque . . . features a special high-efficiency, three-element torque converter with a stall torque ratio of 3.7 to 1 . . . provides total torque multiplication of 29.6.

And, because it has only 3 speeds instead of 4, it cuts the shifts operators must make—naturally the three-speed loaders crowd, dig, load and travel faster.

What's more, like the time-proved CRT-3331 "Time-Study" TORQMATIC, *it's designed to need no major service for two-engine overhauls.*

The reasons are clear: Integrated converter-transmission eliminates troublesome hoses . . . planetary (not countershaft) gearing splits tooth load three ways . . . clutches are up to twice the diameter of those used in other hydraulic transmissions.

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Allison TORQMATIC

**TORQMATIC® DRIVES**

*THE MODERN DRIVE FOR MODERN LOADERS*

The new No. 12 Series E Motor Grader spreads untreated base and handles cleanup for Massey Sand and Rock Company

# THE NEW NO. 12E SETS THE STANDARDS

Widening U. S. 60-77-99 to a 4-lane limited-access highway, Massey Sand and Rock Company of Indio, California, recently added a new No. 12E Motor Grader to its Cat fleet. The improvements, effective with this new series machine, showed up immediately. As Tom W. Carter, manager of the firm, puts it: "The increased productivity of the new No. 12 was very noticeable. You can depend on new Cat products to give greater operator comfort and better productivity."

One of the big reasons for the new performance standards of the No. 12 is the new compact 115 HP engine. Incorporating the latest developments in metallurgy and design, this modern engine has greater lugging ability for the tough jobs, long life and easier servicing.

Caterpillar engineers did not stop with just a compact diesel. There's a new vertical starting engine to give easier, all-weather starting. The dry-type air cleaner is now standard—it removes 99.8 per cent of air-borne dirt every service hour, cuts maintenance.

Of course, the new No. 12 retains the dependable Caterpillar oil clutch that gives up to 2000 hours without adjustment; mechanical controls that engage easily; and plenty of throat clearance between moldboard and circle for improved rolling action.

See your Caterpillar Dealer. He'll show you—on your job—that the No. 12E lives up to what users are saying about it. He can also show you the 150 HP No. 14, the No. 112F with 100 HP and the No. 112E with 85 HP—they're built to be the best for the job.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

**CATERPILLAR**

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**THE NEW NO. 12
MOTOR GRADER BUILT
FOR THE TOUGH JOBS**

**Atlas launching pad** being constructed near Spokane, Wash. The project manager for MacDonald-Patti-Scott-Leawell, the general contractor, commented that each pad seems to be more steel than concrete, a construction necessary to withstand the impact of an Atlas launching.

# The Bethlehem reinforcing bars in this missile base have a certified pedigree

When bundles of Bethlehem reinforcing bars arrive at a job site, they have a known history. Certified mill test reports, furnished by Bethlehem, are matched with heat numbers by which the bundles of bars are identified. When you buy Bethlehem bars you are assured of composition, mechanical, and physical properties fully meeting all requirements of ASTM Billet-Steel Bar Specifications—a certified pedigree.

Bethlehem supplies a complete line of billet steel reinforcing bars, including the extra-large sizes 14S and 18S, in all standard grades. Special grades are also available.

Bar fabricating is our specialty, whether you need a hundred tons or ten thousand. For accurate fabrication, well-executed placing plans, and prompt delivery to your job site, order Bethlehem Billet-Steel Reinforcing Bars.

Steel

*For Strength*
*. . . Economy*
*. . . Versatility*

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
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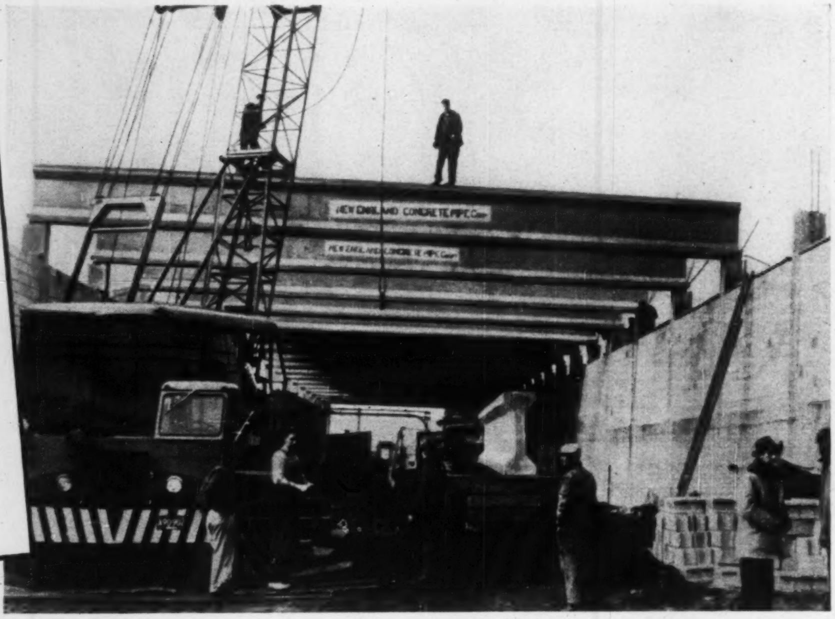
**BETHLEHEM STEEL**

BETHLEHEM STEEL

# 43
# PRESTRESSED CONCRETE I-BEAMS for unique Budd Car Building

As each of the 20-ton prestressed beams was needed, it was moved to the site and erected by crane. Beams are 44" deep and span 46′ 10" between column centers.



## . . . made with Lehigh Early Strength Cement

Now complete at Somerville, Mass., is the Boston and Maine Railroad's new Budd Car Servicing Building—built of concrete for fire safety, efficient operation, long life and low maintenance.

All 43 of the big I-beams used on the job were identical in size and shape, which contributed to the simplicity and economy of their manufacture. Forty-one of the beams were designed for a total uniform load of 1,680 psf, plus four concentrated monorail loads of 1,500 pounds each. The other two beams required additional prestressing strands to handle loads from a sand storage tower.

Lehigh Early Strength Cement was used by New England Concrete Pipe Corporation, manufacturer of the beams, to maintain a fast, economical casting cycle paralleling progress on the roof structure. The strength specified for application of prestress—4,000 psi—was reached in just 15 hours, one third the time required with normal portland cement.

This is another example of the advantages of Lehigh Early Strength Cement in modern concrete construction. Lehigh Portland Cement Company, Allentown, Pa.

**LEHIGH CEMENTS**

Budd Car Servicing Building
Somerville, Mass.
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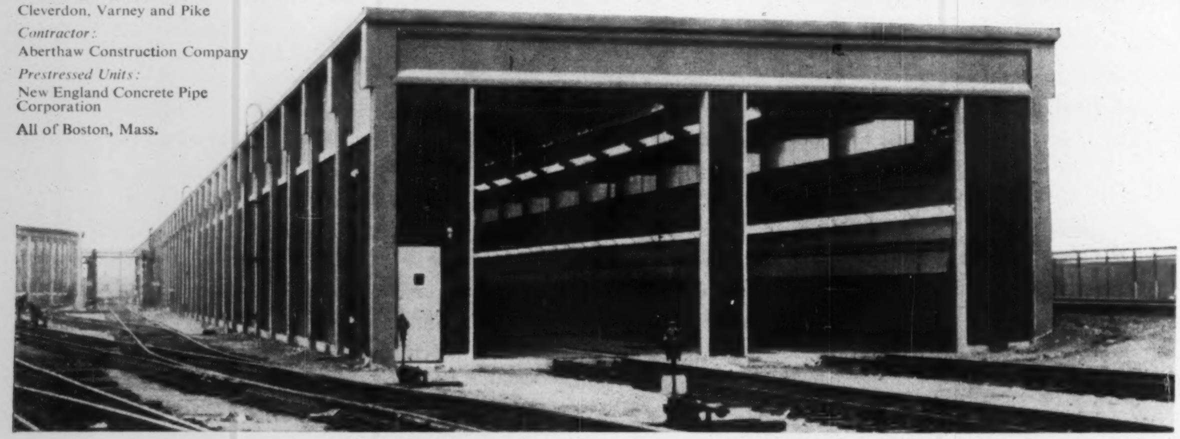
Boston and Maine RR.
*Architect:*
Bastille Halsey Associates
*Consulting Engineers:*
Cleverdon, Varney and Pike
*Contractor:*
Aberthaw Construction Company
*Prestressed Units:*
New England Concrete Pipe Corporation
All of Boston, Mass.



Nearly 33,000 square feet of floor area are provided by the unique 720′ long one-story service building. It has 40 bays and a floor-to-roof clearance of 17′.

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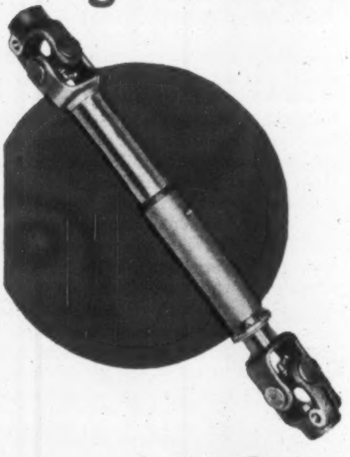
# BLOOD BROTHERS jointed steering assembly guides giant LeTourneau-Westinghouse coal hauler!



No matter how large the equipment you design, there's a Blood Brothers steering or jointed driving assembly big enough to do the job. One example of the use of Blood Brothers components on large equipment is the L6S Steering Assembly on the LeTourneau-Westinghouse Haulpak Coal Hauler.

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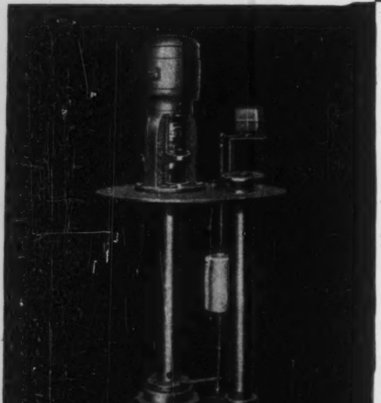

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## Inference Not Implied

Sir—I have read with interest an editorial entitled "Manners and Morals," which refers to such terms as payola, graft, conspiracy, bribery, etc. (ENR Nov. 3, p. 92).

I noted in particular your reference to "bribery in the State of Washington." This statement seems to imply incidences of "bribery" in the Washington State Highway Department, and I feel that it should be explained that there have been no instances of "bribery" within the State Highway Department.

Donald M. Brown
*Public Information Officer*
*Department of Highways*
*Olympia, Wash.*

**Editor's Note:** The editorial did mention fines for bribery in the State of Washington. It did not mention the State Highway Department. The bribery case in point involved dam construction, not highway construction.

## Choose Your Partner

Sir—In your story describing construction of Bethlehem Steel Company's office building in San Francisco (ENR Oct. 27, p. 34), you state that John A. Blume and Associates were structural engineers for the project, and that Hayes & Little were architects associated with Welton Becket and Associates.

Please be advised that the structural engineering for the project was a joint venture by Hayes & Little and John A. Blume and Associates, both of which firms are structural engineers.

Jesse E. Hayes
*Hayes & Little*
*San Francisco, Calif.*

## Favors Lump Sum

Sir—Regarding the comment by Robert W. Leach of Caracas, Venezuela (ENR Oct. 27, p. 100), I certainly hope that not many contractors, architects and engineers take his comment too seriously about unit price bidding from a few general drawings.

Many good jobs have been taken too cheaply by contractors who have not fully analyzed the complete job *with all drawings* down to the very last detail and who have used unit prices which have no basis of realism. This type of bidding has been disastrous to contractors in the past and could ruin the construction business in the future if Mr. Leach's recommendations are followed.

Let's continue to keep bidding on a lump sum basis.

Thomas E. Wirt
*Chief Estimator*
*F. E. Young Construction Co.*
*San Diego, Calif.*

IN HYDRO AND
FLOOD CONTROL PROJECTS

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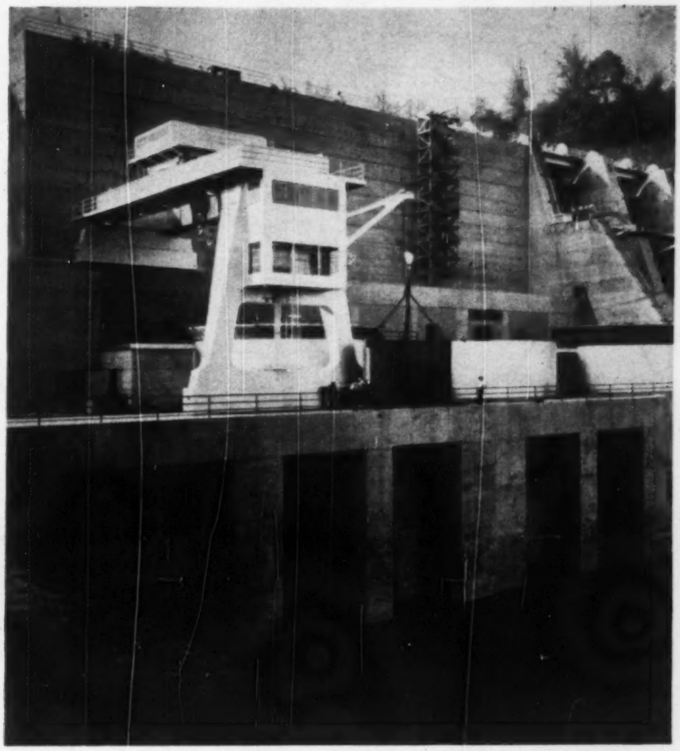

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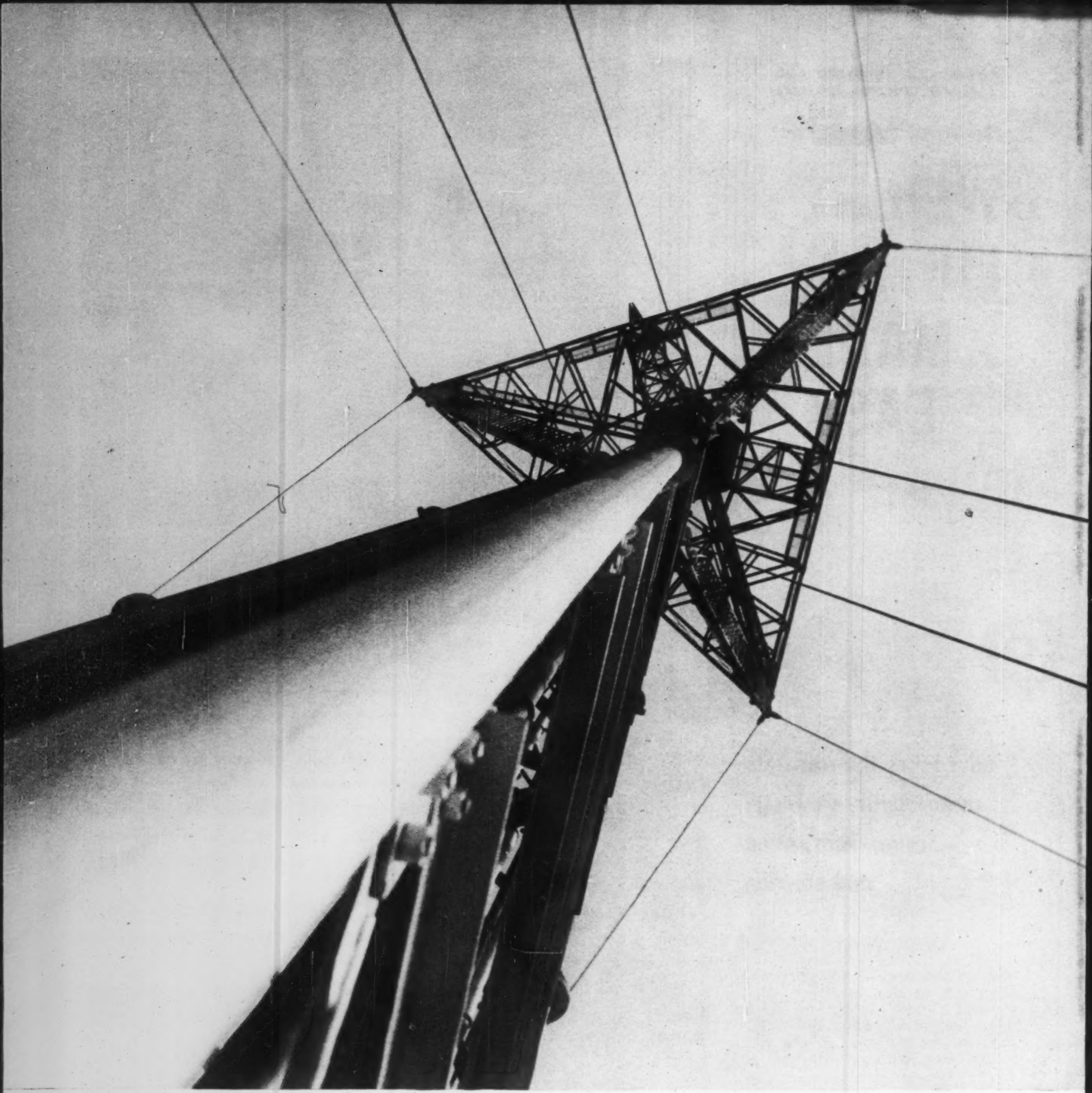

World's first 3-antenna, candelabra-type TV tower built for Baltimore stations WBAL, WJZ and WMAR. Tower Design and Fabrication: Dresser-Ideco Company, Columbus, Ohio. Tower Erector: J. F. Beasley Construction Company, Muskogee, Oklahoma.

# Candelabra-type TV tower built with USS "T-1" Steel legs to withstand hurricanes

This spectacular three-channel television tower makes it easy for fans in Baltimore, Maryland, to tune in different stations—they are all in one spot. Built to withstand hurricane winds of 165 mph, the tower makes key use of *super strong* USS "T-1" Steel in the three 625-foot legs. The total tower height is 730 feet.

Three 10-ton antennas are perched on top of a triangular platform, 105 feet on each side. According to Dresser-Ideco Company, designer and fabricator of the tower, USS "T-1" Constructional Alloy Steel was selected for the tower's main support members because of the weight problems imposed by the heavy top. Had structural carbon steel been used, the legs would have been almost twice as thick, adding further wind resistance and stress.

**Weight saved.** Instead of about 300 tons, for carbon steel, only 105 tons of "T-1" Steel were needed for the legs. They are solid rounds, quenched, tempered, straightened, and stress relieved in diameters of 7 inches for the first 480 feet and 5¾ inches for the remaining 145 feet. Use of "T-1" Steel saved freight, fabrication costs and foundation costs.

Super strong legs of USS "T-1" Steel support the tremendous weight of the tower. Their smaller size reduces wind resistance.

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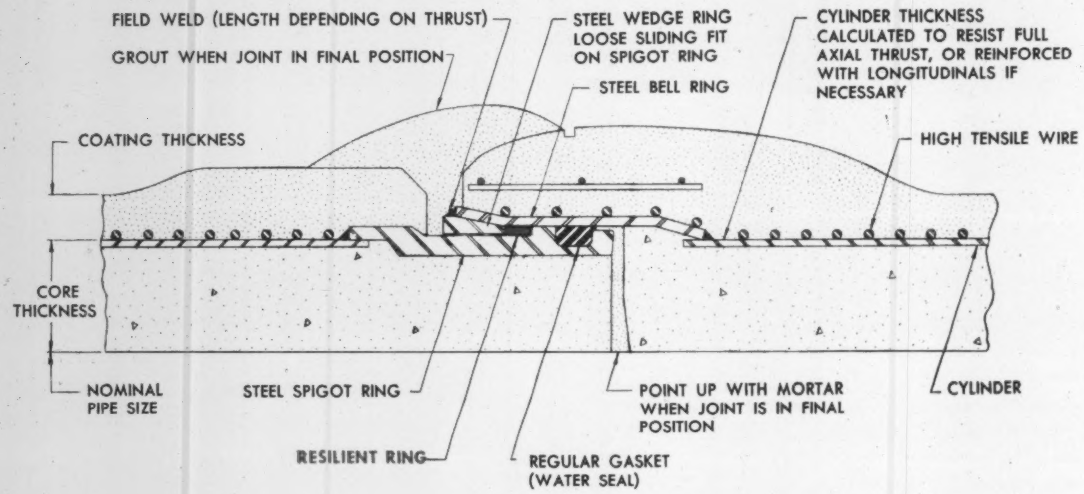
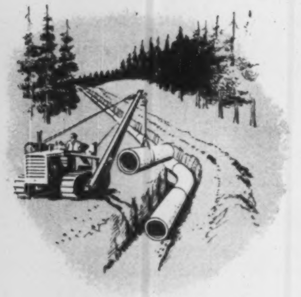
# LOCK JOINT'S FLEXIBLE TIED JOINT *


FIELD WELD (LENGTH DEPENDING ON THRUST)
GROUT WHEN JOINT IN FINAL POSITION
STEEL WEDGE RING LOOSE SLIDING FIT ON SPIGOT RING
STEEL BELL RING
CYLINDER THICKNESS CALCULATED TO RESIST FULL AXIAL THRUST, OR REINFORCED WITH LONGITUDINALS IF NECESSARY
COATING THICKNESS
HIGH TENSILE WIRE
CORE THICKNESS
NOMINAL PIPE SIZE
STEEL SPIGOT RING
POINT UP WITH MORTAR WHEN JOINT IS IN FINAL POSITION
CYLINDER
RESILIENT RING
REGULAR GASKET (WATER SEAL)

RUBBER & STEEL FLEXIBLE TIED JOINT

## SECURE...FLEXIBLE...WATERTIGHT



Lock Joint Pipe Company, pioneer in the development of efficient, flexible, watertight joints for concrete pressure pipe, once again is first with the most practical solution for restraining thrust at joints where conventional blocking is impossible or impractical.

A greater measure of flexibility is imparted to this field-welded joint by the resilient ring, located between the weld and the watertight rubber gasket seal. This ring also improves the tensile characteristics of the joint by distributing the load more evenly around the periphery of the joint ring.

Detailed description of this joint may be obtained from Lock Joint Pipe Company on request.

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ENGINEERING NEWS-RECORD

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# THE CONSTRUCTION WEEK

**NEW POLLUTION BILL COMING**—Sen. Robert S. Kerr (D., Okla.) promised this week to start the new session of Congress with another pollution control bill. Addressing conferees at the Eisenhower-sponsored National Conference on Water Pollution (see p. 23), he took a swipe at the President's veto last session of a bill upping sewerage construction grants from $50 million to $90 million a year: "The vetoed bill did not provide too much," the senator said, "it provided too little." We must not permit "a price tag to prevent action."

**SPACE IS MONEY**—New York City's Pennsylvania Railroad Station may be razed to grade for a 30- to 40-story office tower. Another plan: Make it a parking lot. Idea is to cut real estate property taxes. Because basic rail facilities—waiting rooms and trackage—are below grade, razing of the "cap" would not actually eliminate the terminal—only interior airspace and unprofitable leased quarters would be affected.

**DEATH OF AN IDEA**—There was no funeral and no obituary, but a plan to use coal in building Pennsylvania's roads has been quietly buried. The Curtis-Wright Corp., which created the process and sold the idea to the state legislature, has had a change of management and a change of heart. The Pennsylvania Department of Highways helped kill the idea by pointing out that the process would use as little as 8 or 10 tons of coal per mile, hardly enough to lift the state's sagging coal industry out of the doldrums.

**HOFFA INDICTED**—Teamster president James Hoffa may have lost more than he gained last week. He was indicted in Florida on a mail fraud charge relating to a real estate venture in which union funds were allegedly used. In an unrelated action, the court that set up the board of monitors removed some of the roadblocks to a union convention at which Mr. Hoffa hopes to be reelected with no court strings attached.

**POLITICOS CRY "POLITICKING"**—The congressional highway investigating subcommittee spotlight may be turned next to land appraisal practices in Massachusetts, home state of President-elect John F. Kennedy. Committee member Gordon Scherer (R., Ohio) accused chairman John Blatnik of postponing this probe until after Election Day to avoid embarrassment to Senator Kennedy. Representative Blatnik accused Mr. Scherer of making "wild accusations," he said he postponed all investigations.

**MORE WINDOWLESS CLASSROOMS**—Some 50 elementary school pupils in Palm Springs, Calif., will go to classes next year in rooms without windows. They'll be part of an effort to find out effects of windowless classrooms on both students and operating costs. The idea is being tried also in Texas and New York State (ENR Oct. 20, p. 59).

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Atlanta 8, Cleveland 35.

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# WASHINGTON OBSERVER

- **Job-guessing still a favorite game**
- **Decline in construction predicted**
- **Kennedy plans building programs**

- **Names and faces for the new Administration are falling into place** yet a lot of inside gossip is still being merchandized in Washington. Appointment of a Secretary of Interior, Stewart Udall, Democratic Representative from Arizona, and a Secretary of Commerce, Gov. Luther Hodges, of North Carolina, opens the way for speculation on lesser posts affecting construction.

**James K. Carr of California will be Undersecretary of Interior.** The story goes that Sen. Clair Engle (D., Calif.), in endorsing Congressman Udall for secretary, gets consideration for having Mr. Carr, who heads up the California water complex, for the second job. Rep. John Blatnik (D., Minn.), has taken himself out of consideration for the job.

**A new head of the Bureau of Public Roads will be named.** Three names have been put into the pot. Rex Whitton, chief engineer of the Missouri State Highway Commission is one; D. C. Greer, the Texas' state highway engineer is another. The story goes that A. E. Johnson, executive secretary of the American Association of State Highway Officials, can have the job if he wants it.

**To date, friends say that Mr. Johnson is not interested,** that he feels he cannot leave his present position.

**Bertram Tallamy, the present highway chief,** is expected to become an adviser to the World Bank on international highway matters, among other assignments.

—

- **Business plans for new plant and equipment in the first quarter of 1961 reflect the current economic sluggishness.** The government figures, put out by the Commerce Department and the Securities and Exchange Commission, predict a 2% decline for the first three months—an annual rate of $34.9 billion. (That compares with a 1960 full-year estimate of $35.6-billion.)

**Construction takes its bruises, according to the survey.** Transportation and public utilities spending will be down a bit. Yet commercial building will remain at an even keel. Any new policies of the Kennedy Administration, particularly in the area of depreciation of industrial plant, could change the pattern during the year.

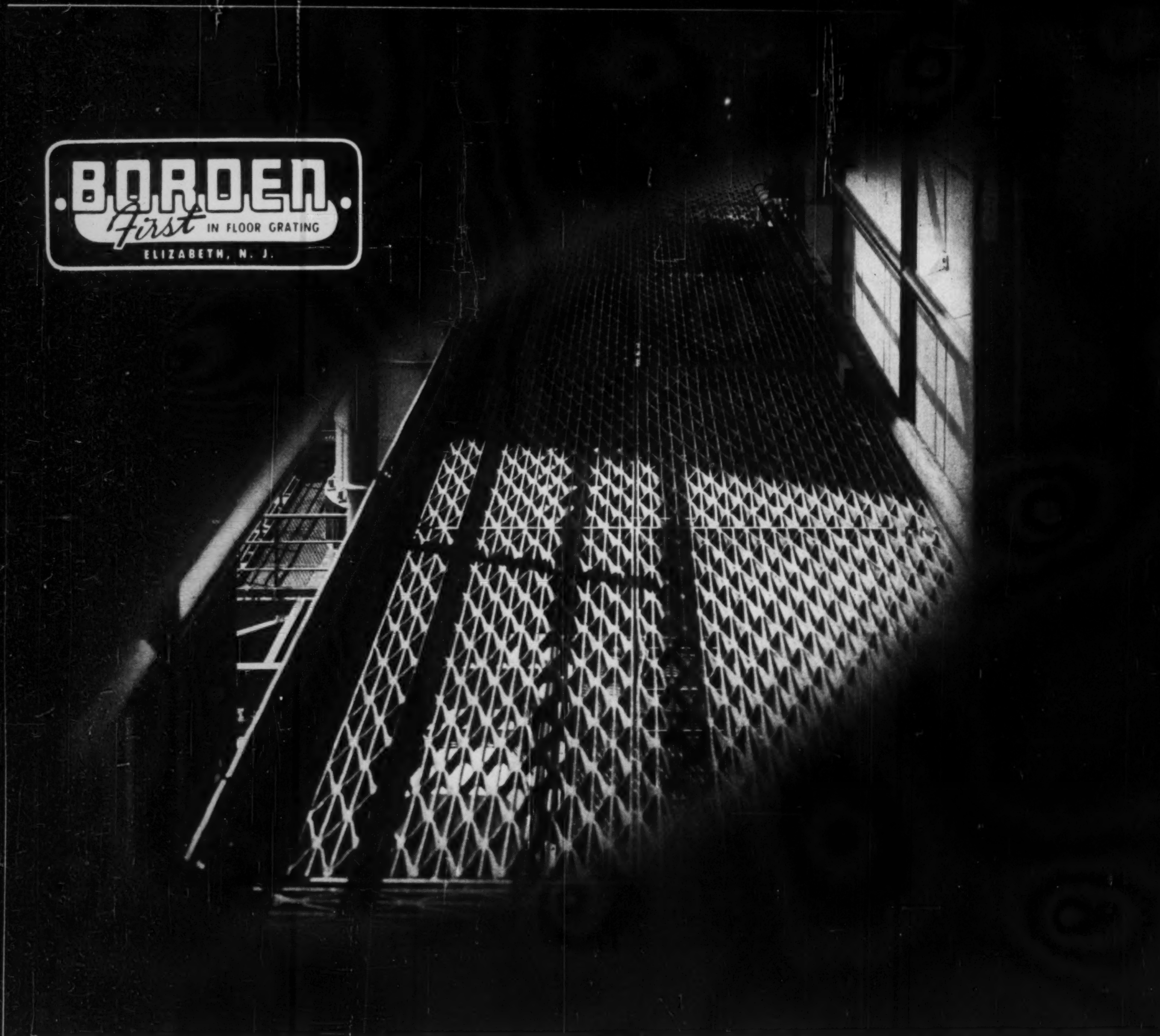
—

- **President-elect Kennedy accepts the idea that there is a recession** in making his plans for his Administration. The sluggishnes in housing and the chronic difficulties of the so-called depressed areas combine to give the new President problems. He is now working to get swift action in the new Congress on:

**Urban renewal**—The special commission headed by Sen. Paul Douglas (D., Ill.), will have a program before year's end.

**School construction**—Senator Kennedy and his new Secretary for Health, Education and Welfare, Gov. Abraham Ribicoff, put a federal bill on the priority list.

**Interest rates**—The President-to-be is cautious about manipulating money policy, but he is insistent on doing something to stimulate the housing market.



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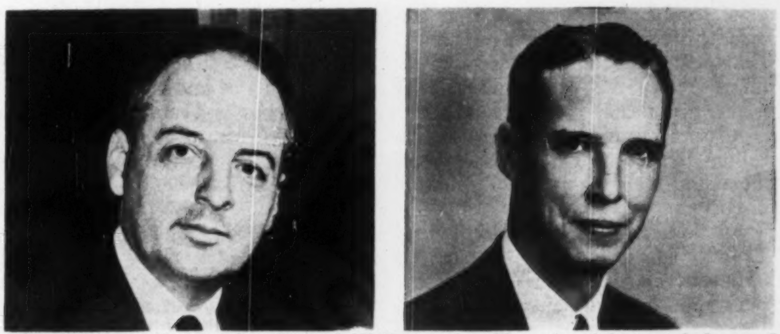
**IKE WANTED** meeting to soften his veto of pollution aid bill.



**SECRETARY** of Health Education and Welfare Arthur Flemming (left) passed the word to Surgeon General Leroy Burney (right).

**HEADING UP** Public Health Service's pollution control is Mark Hollis (left) and Gordon McCallum (right).

# What to Do About Pollution

The Eisenhower-sponsored National Conference on Water Pollution came and went this week in Washington. The important decisions that are now the responsibility of the incoming Kennedy Administration will be developing in the first months of the new year, and on Capitol Hill.

Some 70 spokesmen for government, industry, citizen groups, public health and sanitation gave evidence of agreement on bedrock facts of water pollution and the programs required to meet the challenge. Their judgments pointed toward a fair measure of unity on conclusions and proposals such as these:

- Retain present broad lines of attack on pollution detection, abatement, research and control (including enforcement), but expand all phases.
- Promote increased effort and cooperation by stepping up information and education for all segments of the citizenry.
- Leave pollution control basically to the states, singly and in interstate compact groups, with the federal government applying enforcement authority where state organizations are unable or unwilling to act.
- Modernize state laws, regulations and control agencies to meet current and foreseeable requirements, and broaden federal authority moderately to facilitate interstate action and to include jurisdiction in offshore pollution.
- Speed construction of municipal treatment plants by enlarging the federal grant program and promoting other aids, both state and federal. Also, encourage study and consideration of tax incentives for industrial waste treatment works.
- Expand research in water pollution, and increase federal activity and support in this area.

Government, industry, and conservationist speakers set the scene for the three-day pollution roundup at opening sessions December 12 in Washington, D. C. Called together at the request of President Eisenhower following his veto of an increase in federal aid for treatment plants, the aptly-named National Conference on Water Pollution attracted some 1,500 persons to the country's first comprehensive discussion of the subject.

Secretary Arthur Flemming, of Health, Education and Welfare, and Surgeon General Leroy E. Burney, who headed the conference, repeated the objectives they had set months ago: That the conference try to obtain substantial agreement on national goals for water pollution control and on the specific programs needed to reach them.

**Speaking for industry,** Albert E. Forster, president and chairman of the Hercules Powder Co., urged that control be kept at the state level and given equal importance with highways and schools as regards funds, manpower and dedicated purpose. He called for vastly increased research effort immediately under the guidance of the U. S. Public Health Service.

**For the conservationists,** president Ira N. Gabrielson of the Wildlife Institute cited efforts of the states, industry and agriculture as falling short of the need and called for an upgrading of pollution control in the federal hierarchy, accompanied by increased federal aid and activity. Like a number of later speakers, he stressed the importance of conservation and recreational values.

Panel sessions explored separate aspects of the broad problem on the second day. Dwight F. Metzler, chief engineer of the Kansas Board of Health, postulated a need for increased treatment plant expenditures to an average of $600 million a year by municipalities in this decade and estimated about the same requirement for industry—an annual total approximating $1.2 billion. He also stressed the need for better information on the whole spectrum of water quality and contaminants.

All speakers agreed that public institutions, especially federal installations, must stop their too-prevalent polluting discharges.

Another speaker for industry, Leland C. Burroughs of the Shell Oil Co., was optimistic about industrial water supplies and control of industrial wastes. He discounted any fear of a future water shortage, noting frequent re-uses by industry, which Mr. Forster had said may quadruple in the future.

Industry spokesman generally foresaw few hazards to industrial use of water and agreed that industry should treat harmful wastes to satisfy reasonable water quality standards. But they and other speakers pointed out that the assimilative capacity of streams and aquifers should always be utilized to yield optimum benefits.

In fact, it might be accepted as a consensus of the conference that water uses and pollution control practices should be balanced to yield maximum benefits, as determined for each stream or area. This view supported the argument for area control.

Economists and economic consultants on the program spoke of the difficulty of evaluating pollution control benefits and warned against over-investment without sufficient study of gains. But labor's spokesman for the AFL-CIO had no doubts about the immediate need to move on a bigger scale than has been done so far. Over-all, the engineers and the health and sanitation experts tended to the same view.

R. G. Lynch, a MILWAUKEE JOURNAL columnist, urged the application of successful advertising techniques to overcome public apathy toward water pollution needs.

Leonard Pasek, of the Kimberly-Clark Corp., stated industry's attitude: Industry is very cognizant of water pollution problems, he said. It has shown by extensive and expensive research and accomplishments in pollution abatement and water conservation that it has no intention of shirking its responsibility in water pollution control. "What industry does object to," he declared, "is being forced to make large expenditures to meet arbitrary standards that are unrelated to the conditions in the particular stretch of stream in question. . . . Industry is perfectly willing to spend money to improve demonstrated problem situations in particular areas . . . but application of abstract, theoretical criteria can easily result in imposition of uneconomic penalties on our entire system of production and consumption.

"The public will have to accept the fact that the cost of maintaining water quality must be and is part of the cost of production and must be paid for by consumers," Mr. Pasek stated.

Proposals for financing needed sewage treatment works included a suggestion by Frank E. Curley, of Hawkins, Delafield & Wood, municipal bond attorneys, that a system of federal-state-municipal cooperation similar to the low rent public housing program be considered. Under this program, state-created public housing authorities issue bonds secured both by the revenues from the projects being financed and by a federal guarantee to make up deficiencies in the debt service.

Robert F. Boger, publisher of ENGINEERING NEWS-RECORD, declared that substantial progress in pollution abatement must have a strong stimulant that can be supplied only by the federal government. He proposed creation of a fund such as the Highway Trust Fund from earmarked taxes. Possible sources, he suggested, are taxes on water bills, license fees for business and pleasure craft and the gasoline and oil taxes now rebated to boat owners.

## A New Man for New Starts

**The next Secretary of the Interior, Stewart L. Udall, brings to the job a keen interest in developing natural resources and harnessing the rivers of the West for power and reclamation, and a thorough understanding of what it takes to get things done in Congress.**

**Mr. Udall, 40, is an energetic, intelligent legislator who in three terms won a place as a leader of the liberal bloc in the House. At the same time he has earned the confidence of the conservative leadership as a man who is willing to work toward the possible and understands the compromises that have to be made in getting legislation through congress.**

**Representative Udall is a lawyer, a member of an old Arizona family that has sent innumerable members into public and judicial life, and the father of six.**

**Although he has served on the House Interior Committee, he has been more active in civil rights, aid to education, and labor legislation than in western problems.**

**The new Secretary will support Kennedy campaign promises of more public work projects "immediately" and to "get the country moving again" in the flood control and reclamation areas.**

**Mr. Kennedy said during the campaign that he would "not stand by and permit another Hells Canyon blunder" and would support early authorization of the Paradise-Knowles multipurpose project on the Flathead River in Montana. Mr. Udall himself supported the Hells Canyon Dam in committee.**

**He is also keen on spurring development of saline water conversion, which is now moving into the stage of construction of demonstration plants. He is anxious for the U.S. to beat Russia to a "breakthrough" on producing cheap fresh water from the sea.**

**Mr. Udall has not taken a doctrinaire approach to power development, however. He favors utilizing the resources of private industry whereever possible. He authored an amendment to the helium conservation program last year, for instance, designed to give private industry a break. He is eager to preserve national park lands but favors letting private industry develop mineral resources on public land where feasible—a "multiple purpose" approach to public lands.**

**A clue to the approach he will take to his new job was obtained by a reporter who dropped into his office the day before his appointment was announced. The newsman found him reading the biography of one of his predecessors, Harold Ickes, who, under President Roosevelt, did more than any other Interior Secretary to launch major projects to develop the nation's natural resources.**

# The 'Payola' Mess Gets Messier

- **More contractors and state highway engineers linked to 'payola' in Florida.**
- **All involved deny a quid pro quo. Blatnik probers search for substandard construction.**

The special congressional subcommittee on the Interstate Highway System widened the curtains last week on the Florida highway scandal.

During five days of hearings in Washington, the Blatnik investigating group showed that the acceptance of "payola" from contractors by Florida Road Department personnel—engineers and inspectors—was more widespread than an earlier state legislative inquiry had demonstrated.

And the full story is yet to come. There will be more this week; and next month the committee will crank up a new round of hearings on Florida.

**At last week's sessions, the subcommittee and its FBI-trained investigators increased to five the number of contractors and to 33 the number of state employees implicated in the scandal.**

It produced evidence and testimony that between $54,000 and $75,000, mostly in cash, was passed out to the state's engineering personnel in the past 4½ years. This included not only the previously publicized $25 weekly payments made by Cone Brothers Contracting Co. of Tampa, Fla., but newly revealed payments as well.

The payments included compensation to engineers for working for contractors during off-hours from state jobs, plus no-interest, non-repayable "loans" granted to state personnel by roadbuilders. Although the "loans" were carried on company books as such, all of the contractors who testified admitted that in most instances they were not—and did not expect to be—repaid.

In addition, the subcommittee disclosed that contractors showered whiskey on state engineering employees, frequently bought their meals and gave them turkeys, hams and gifts of cash at Christmas. Besides this, at least three were permitted to use contractor discounts to purchase private automobiles, appliances and building materials.

Here is a summary of cash payments to the 33 state employees, as produced in the testimony:

- By Cone Brothers, 1957-60, $26,671. Of this amount, $23,325 was paid out to 16 men as regular $25 weekly payments mailed out in plain white envelopes without any identification as to the sender. Most of the recipients said, however, they knew or strongly suspected that the money was coming from Cone and looked upon it as a gift.
- By W. L. Cobb Construction Co. of Atlanta and Tampa, 1959-60, $14,321.
- By Brinson-Allen Construction Co. of Tampa, 1959, $6,126.
- By Hardaway Contracting Co. of Columbus, Ga., 1956-60, $4,208.
- By J. W. Conner & Sons of Tampa, 1956-60, $2,834.

These payments add up to $54,162, but the subcommittee said the total could range up to $75,000 when an extra $21,439 spent by Cone Brothers for whiskey and for what the company listed as "State Road Department Expenses" is added. Julian L. Cone Jr., president of Cone Brothers, insisted, however, that not all of the whiskey his firm charged off as a business expense went to state engineers. He said many of the State Road Department expenses represented outlays that were not payments to state personnel.

Did these payments and favors represent payoffs by the contractors to state engineers for approving highway projects that did not meet specifications?

"No," was the unanimous answer of officials of all of the contracting firms and of 18 state road people called to testify.

Mr. Cone insisted the payments he made were to reward those who did a good job of expediting the state's operations in highway construction so that his contracting firm could keep on or ahead of schedule.

W. L. Cobb, president of Cobb Construction; Dwight M. Plyler, vice president of Hardaway; Andrew Martin, job superintendent of Brinson-Allen; and James W. Conner Jr., secretary of J. W. Conner & Sons, all said it had been standard practice in Florida for years for contractors to make "loans" to engineers, to hire them during their off-duty hours and to give them gifts, particularly of whiskey. Mr. Cone said the practice had been in effect for 40 years, but Mr. Cobb said it did not become extensive until after World War II.

Mr. Cobb, whose construction company has done work in Mississippi, North Carolina, South Carolina, Alabama, Georgia and Florida, said the practice of giving gifts to highway department employees has been customary in all of them.

The engineers and others who testified said they saw nothing wrong at the time in accepting payments and gifts from the contractors. But all who testified admitted they now realize their actions raised justifiable suspicions that they had granted preferential treatment to certain contractors.

Over the weekend, the Blatnik group was receiving evidence bearing on the question of whether Cone Brothers projects show any indications of substandard construction.

The schedule for this week called for testimony from the U. S. Bureau of Public Roads, the Florida Road Department and an independent consulting firm retained by the state legislative committee.

The state's representative in conducting the tests, H. C. Weathers, notified the committee last week that both he and his wife had received anonymous threats by telephone. The FBI was notified. Mr. Cone said under questioning that he had not made the threats and that to his knowledge no member of his company had.

After hearing this week's testimony, the subcommittee will recess its hearings until January, after Congress reconvenes. It will then delve further into engineer-contractor relationships and take up alleged irregularities in the disposition of right-of-way improvements in Florida.

# New York Proposes Office-School

With an eye on the students and a hand out for tenants, New York City has come up with a plan to combine an income-producing office building and a commercial high school in one midtown structure. This way city owned property will produce income and the Board of Education will replace an outmoded school.

The proposed building would be about 40 stories high and would cost $15 million to build. Board of Education planners hope they can iron out details soon enough to get the building up and operating—at least for the students—by the fall of 1963.

The lower eight floors would house the commercial high school, the upper tower floors would go as tenant office space.

One-third of the $15 million would be for the school portion of the building. It's hoped private capital will supply the rest.

**GOVERNOR-ELECT** John B. Swainson (left) stands beside Highway Commissioner John C. Mackie while Governor G. Mefinen Williams reads the first of 232 bids by contractors (right) competing for 36 contracts as . . .

# Michigan Packs Them In for

They really opened bids in Lansing last week.

It was the largest bid opening ever held by a state highway department, according to Highway Commissioner John C. Mackie.

The contracts—all awarded within 36 hours, thanks to electronic computers—cover 73 miles of highways in 10 counties. They include 42.5 miles on Interstate roads, 56 bridges, and water main and sewer construction.

Michigan Governor G. Mennen Williams opened bids on the first project, and it turned out to be the closest. The difference between the low and second low bids was $276 on this job; it went for $1,730,536.

Most of the bidding was tight. The largest job, 7.4 miles of Interstate, was bid lowest by S. D. Solomon & Sons at $4,012,804—only $6,500 below the second low.

An unofficial tabulation showed that total low bids amounted to $42,314,155, or slightly over 7% below the engineer's estimates. Highway department officials called this normal. The highway department had been apprehensive that the great dollar volume of the projects would force bids up, but this didn't happen.

The only two out-of-state contractors consistently bid quite high and helped account for impressive spreads between the low and high bids. Greatest spread was nearly three-quarters of a million dollars on a $4-million job.

Only the dollar value of the projects made the session any different from others. Commissioner Mackie said he was delighted that it functioned so smoothly.

About 600 persons—500 of them contractors, the rest observers—attended the letting which lasted from 10:30 a.m. to 2:00 p.m. In all, about 100 contractors submitted 242 bids on the 36 projects—an average of 6.7 per project. This is slightly higher than average of 5.8 bids received on the $200 million worth of highway projects let in 1960 prior to the December 7 bid openings. The contracts will be split up between 29 contractors, seven of whom were low bidders on two jobs. (No one was low on more than two projects.)

Highway department officials conceded that the enormous contract letting proved more difficult for smaller roadbuilders than larger ones. Not only were smaller estimating departments overburdened by trying to estimate so many jobs at once, but, according to Howard Hill, managing director of the Michigan State Highway Department, if a contractor can handle $2 million worth, he tries to bid all jobs under that figure. So the little guy probably has difficulty getting bid deposits. The jobs require a 5% bid deposit.

It was estimated that bid envelopes contained between $15 million and $20 million worth of certified checks for bid deposits on the 36 projects. S. J. Groves & Sons bid on 14 projects re-

**SMOKE CLOUDS** the air but not the bidding. Note-takers include Murray D. Van Wagoner (center) formerly highway commissioner, later governor.

# $45 Million in Road Bids

quiring deposits totaling $1,904,500. Groves was not the low bidder on any of them.

Large contractors like Louis Garavaglia, Contractor, Inc. and Denton Construction Cos. said the great value of the projects neither helped nor hindered their ability to estimate and bid on jobs. Denton said it did not affect operations at all.

Fredrick W. Neu, vice president of Garavaglia, said he was very happy with the contract letting. "It was very trying to analyze the scope and nature of so many jobs at one time. We were very selective. We could have bid on $35 million worth, but we only bid on $12 million. We know, however, that the large letting benefits the highway department."

Smaller contractors said they would have preferred the contract lettings spread over a greater period of time. A spokesman for the Michigan Road Builders Association said: "The majority of our contractors feel that lettings of $20 million to $25 million are best for their operation. They can concentrate on fewer jobs."

The contract letting was originally scheduled for $33 million, according to the highway department, but some were held over from former bid openings because right-of-way acquisitions had not been completed.

The highway department pointed out that any criticism that the work was not spread over too short a time must be considered unrealistic. "After all," a spokesman said, "we held contract lettings on November 2nd, 16th and 30th. We have another scheduled after the first of the year, and still another $40 million worth in February. We will let $92 million worth in the first quarter of next year alone—we cannot hold these contracts up."

An IBM computer began checking the accuracy of the bid figures immediately after the openings closed, and they were all checked within 24 hours. The results showed that seven low bidders were not low after all, they had figured their bids incorrectly and the computer caught the mistakes.

The highway department will award the contracts within three weeks, said a spokesman.

**AMAZED** contractor William Cinader didn't bid but watched closely.

# Nervi Roof Let

## Barney-Crow takes precast job at $9.6 million

A $9.6-million superstructure contract for Pier Luigi Nervi's George Washington Bridge bus station in New York City was awarded last week to the joint venture of W. J. Barney Corp. and William L. Crow Construction Co.

The award was made by the Port of New York Authority, following careful prequalification of bidders. The design by the world-famed Italian architect-engineer involves construction procedures unusual for New York City. The Authority therefore invited only four contractors, all with reinforced concrete experience, to try for the job.

Corbetta Construction Co., Inc., New York City, was second low bidder at $9,888,777; Frank Briscoe Co., Inc., Newark, N. J., bid $10,416,576; and Grove, Shepherd, Wilson and Kruge, Inc., New York City $10,989,892.

The concrete roof looks like a series of flying bats. It will comprise 26 triangular sections, 14 of which slope upward from a single row of columns in the center of the building. Each triangular 92x66-ft section will be made of 36 concrete panels (ENR Mar. 24, p. 70).

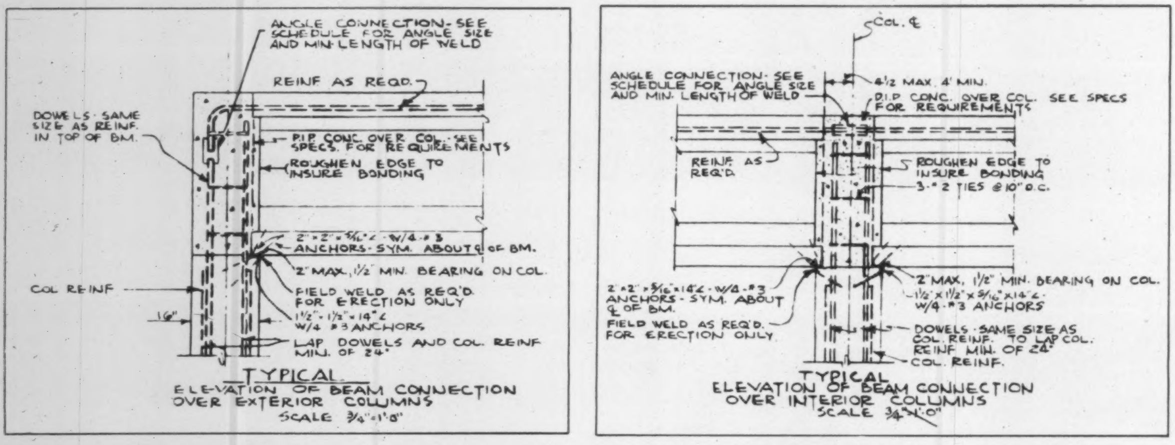
The sides of the raised roof sections and of the bus station itself will be exposed concrete structural members that form openings to ventilate the platforms.

The three-level 400x185-ft station will straddle a depressed expressway that links with the lower-deck roadway of the George Washington Bridge.

Buses will operate from the third-level of the station. The main concourse will occupy the floor below. The lowest level will include long-haul bus facilities and a connection to the New York subway system. The station will connect to the bridge by direct ramps. Almost 2,000 buses will handle 50,000 passengers daily. It replaces and consolidates scattered terminals and sidewalk stations in the area.

Foundations have already been built, as have the roadway and retaining walls of the depressed expressway. Contracts have also been let for steel fabrication and erection of steel. The superstructure contract includes construction of the roof structure, electric, heating and ventilating equipment and all other finishing work.

Construction of the superstructure will begin next month for completion in mid-1962. The bus station is part of the $183-million project to add a six-lane lower level to the bridge, which connects New York and New Jersey.


ANGLE CONNECTION-SEE SCHEDULE FOR ANGLE SIZE AND MIN-LENGTH OF WELD
REINF AS REQD.
DOWELS-SAME SIZE AS REINF. IN TOP OF BM.
P.I.P. CONC. OVER COL.-SEE SPECS. FOR REQUIREMENTS
ROUGHEN EDGE TO INSURE BONDING
2" x 2" x 5/16" ∠ -W/4-#3 ANCHORS-SYM. ABOUT ℄ OF BM.
2" MAX, 1½" MIN. BEARING ON COL.
COL REINF
FIELD WELD AS REQ'D. FOR ERECTION ONLY
16"
1½" x 1½" x 14" ∠ W/4 #3 ANCHORS
LAP DOWELS AND COL. REINF MIN. OF 24"
TYPICAL
ELEVATION OF BEAM CONNECTION OVER EXTERIOR COLUMNS
SCALE ¾"=1'-0"
COL. ℄
ANGLE CONNECTION-SEE SCHEDULE FOR ANGLE SIZE AND MIN. LENGTH OF WELD
4½ MAX. 4' MIN.
P.I.P. CONC. OVER COL. SEE SPECS FOR REQUIREMENTS
REINF. AS REQ'D.
ROUGHEN EDGE TO INSURE BONDING
3-#2 TIES @10" O.C.
2" MAX, 1½" MIN. BEARING ON COL.
2" x 2" x 5/16" x 14" ∠ -W/4-#3 ANCHORS-SYM. ABOUT ℄ OF BM.
1½" x 1½" x 5/16" x 14" ∠ W/4-#3 ANCHORS
FIELD WELD AS REQ'D. FOR ERECTION ONLY
DOWELS-SAME SIZE AS COL. REINF. TO LAP COL. REINF MIN. OF 24"
COL. REINF.
TYPICAL
ELEVATION OF BEAM CONNECTION OVER INTERIOR COLUMNS
SCALE ¾"=1'-0"

**Beam-column connection details, both exterior and interior, specify 2-in. maximum bearing.**

# Collapse Blamed on Bearing Failures

Three engineers investigating the building collapse that killed five workmen last month (ENR Dec. 1, p. 30) attributed the collapse to bearing failures at the beam-column connection.

The accident occurred as erection crews started on a new bay adjacent to a 24,000-sq-ft area that had been erected. On completion, the building would enclose nearly five acres of one-story space for the Walker Manufacturing Co. of Racine, Wis. The plant is located near Harrisonburg, Va.

Framing the 40x50-ft bays were prestressed double tees of 50-ft span bearing on the top flange of prestressed I-beams. Erection welds specified between columns and beams had been completed.

The investigators, retained by Concrete Structures, Inc., of Richmond, Va., fabricators and erectors of the prestressed concrete framing, have completed their report.

**Key quotes from their conclusions:**

- "A bearing failure could have occurred at any beam-to-column connection. . . at any time after the column had received full erection load."
- "The manner in which the failure was triggered is believed to be immaterial."
- "Failure was imminent, and any slight shift brought about by temperature change, wind, movements resulting from erection activities or slight footing settlement could have produced the collapse."

The investigation comprised three phases: a study of the structural drawings and shop details, field inspection of debris left after the collapse, and a series of laboratory load tests.

The structural drawings showed beam-column connection details specifying 1½-in. minimum bearing with a 2-in. maximum. A 2 x 2 x 5/16 angle cast in the beam bottom bears on a 1½ x 1½ x 5/16 seat angle cast in the concrete column (see details above).

**The investigators calculated a uniform bearing stress of 3,460 psi at the bearing seat under dead load of the beam and its double-tee roof slabs.** (Bearing area was figured as 1½ x 10½ in. owing to a ¾-in. chamfer on two sides of the columns.) They cite the allowable bearing stress of 1,250 psi permitted by the American Concrete Institute Building Code (ACI 318-56) for edge loads on 5,000-psi concrete.

A series of laboratory load tests were conducted under the investigators' supervision. Columns sent from the jobsite to the laboratory of Froehling and Robertson, Inc. in Richmond, Va., were cut to fit the testing machine. Compression tests on cores from these columns yielded strengths ranging from 5,304 psi to 5,979 psi.

The engineers set up four of the six load tests to simulate "field variables" considered significant in altering the uniform bearing conditions achievable in the laboratory. Field variables were:

- Uneven bearing contact between beam and column.
- Concrete damage resulting from the heat of erection welding.
- Concrete tensile stresses at the column tops induced by beam shortening due to creep, drying shrinkage and temperature drop or by rotation of the beam seats as erection loading followed welding.
- Bearing stress concentration caused by the projection of bolts used to hold the column seat angles against the forms during casting.

**Four tests, which simulated field variables as outlined above, yielded safety factors ranging from 0.83 (i.e., failure before erection load was reached) to 1.47,** computed from an erection load of 54.5 kips. Two tests, conducted under laboratory conditions of essentially uniform bearing, produced failure loads with safety factors of 1.74 and 2.04. In each tests, failure was defined by formation of a vertical crack behind the seat angles.

In further support of their conclusions **the authors cite their field observations.** "Close examination of columns in the collapsed portion of the building confirmed the fact that bearing failures did occur."

The authors recommend a redesign of the beam-column bearing detail before construction work resumes.

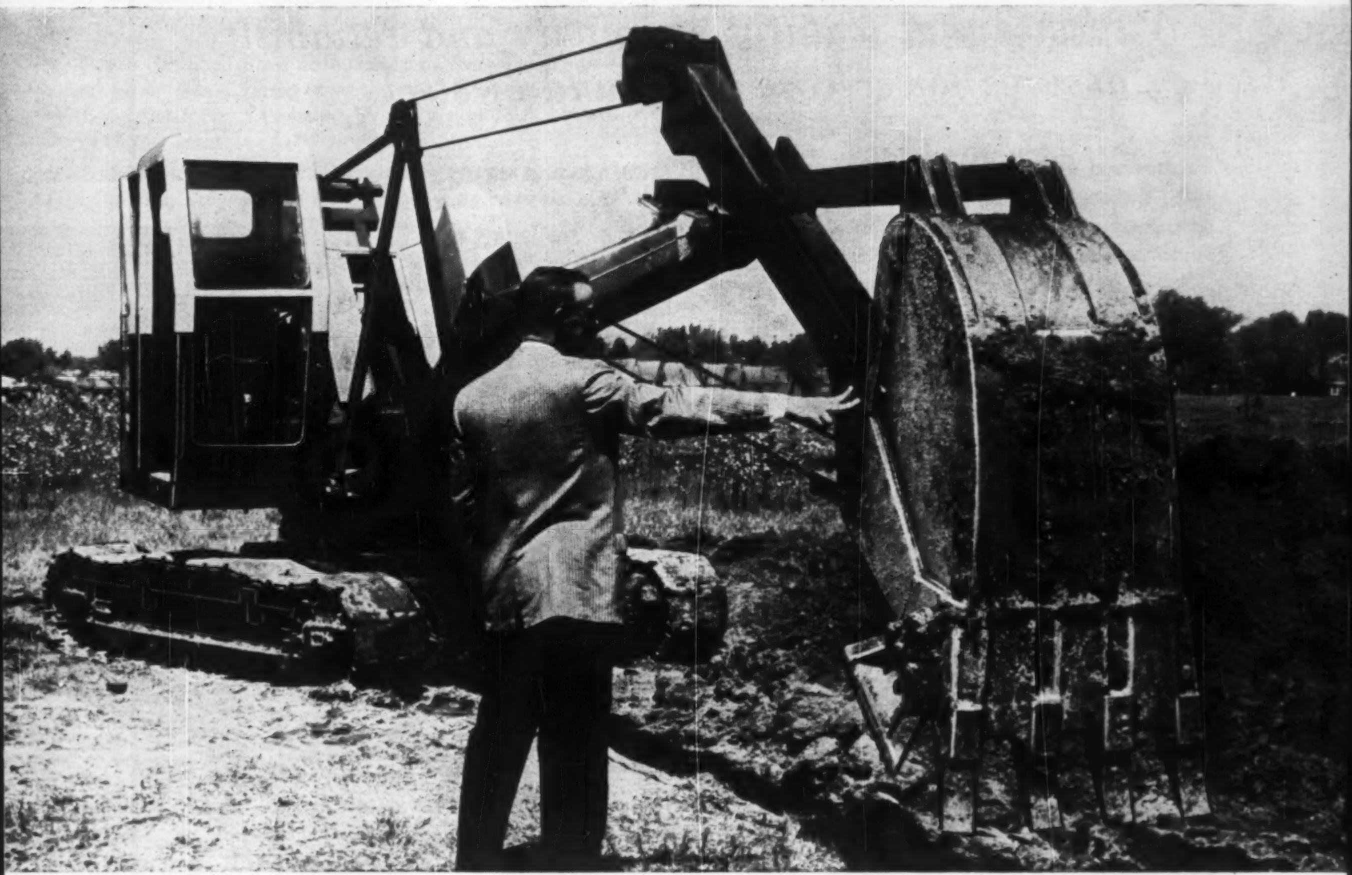
Authors of the completed report are Thomas A. Hanson, a partner in Hanson & Craig, consulting structural engineers of Richmond, Va.; Jack R. Janney, a partner in Engineers Collaborative, consulting structural engineers of Chicago; and Ross H. Bryan, consulting structural engineer of Nashville, Tenn.

**Meanwhile, another team of experts comprising prestressed concrete consultants and manufacturers and erectors is making an investigation for the owner** and the architect. Their mission is "to analyze the cause of the collapse" and "to make recommendations for future erection and procedures that are to be followed."

Included on this team are Arthur R. Anderson, of Tacoma, Wash., R. H. Wattinger of Richmond, Va., William M. Lockrow and Louis Owen, both of Winston-Salem, N. C.; Peter J. Verna of Charlotte, N. C.; and the Formigli Corp. of Berlin, N. J.

Blanton and Levy, consulting engineers of Richmond, Va., performed the original structural design.

# *You'll wonder where the friction went–*



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This picture demonstrates how friction-free the Bucyrus-Erie 14-B ball-bearing swing circle is. One man swings the entire machine easily by pushing on the hoe boom. What's more, the 14-B's swing circle is adjusted, lubricated and sealed at the factory — requires little additional maintenance.

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# Facts on Ryerson post-tensioning for

## *A service that features simplicity and reliability ...assures lower cost per pound of steel*

Prestressed concrete has literally exploded onto the construction scene in the past few years—and has established itself as a vital factor in the building industry.

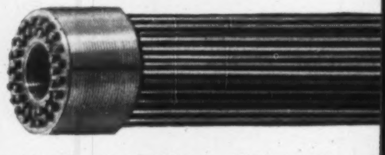
Setting the pace, Ryerson's complete post-tensioning service brings new and dramatic possibilities to the field of reinforced concrete construction. Offering both lower cost and greater versatility, this service makes prestressing really practical for designers and contractors alike.

Today Ryerson post-tensioning service, using the time-proved BBRV method, is playing an important role in more and more big construction projects from coast to coast.

This unique Ryerson service covers prestressed concrete application completely, from adaption of the engineers' design through the final stages of field erection. At every step Ryerson experience is available to overcome doubt and unfamiliarity . . . Ryerson materials and equipment are available to make new techniques safe and reliable . . . Ryerson know-how is available to help get the job done. And it's all wrapped up in a complete, single-price, post-tensioning service. See details on the opposite page.

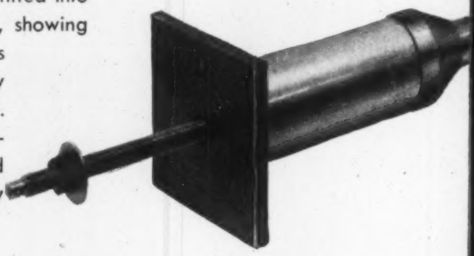
Following are some of the highlights of Ryerson post-tensioning service, showing how it offers new design freedom and economy—saving time and cutting costs. For further information on post-tensioning and the rest of Ryerson's complete service to the construction industry, call your Ryerson representative.

### MOVABLE ANCHOR HEAD



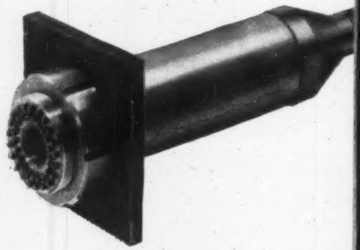
Made of high-grade steel with exterior threads for lock nut and interior threads for pull rod. Steel wires of exact length are inserted through the holes in anchor head and retained by cold formed button heads.

### MOVABLE ANCHOR HEAD ASSEMBLY BEFORE STRESSING



. . . with wire bundle fitted into trumpet and conduit, showing the device which is used to temporarily hold the anchor head. Threaded bar on holding device can be used to secure the assembly to the formwork.

### MOVABLE ANCHOR HEAD ASSEMBLY AFTER STRESSING



The movable anchor head is positively held in its final position by means of a lock nut screwed against the bearing plate. The center hole, after removal of the pull rod, is used as the grout inlet.

**STRESSING DATA**

(according to the Bureau of Public Roads)

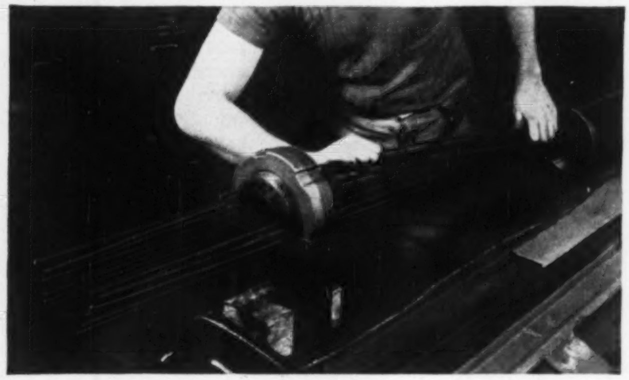
| Number of Wires (diam.) | 1—¼" | 12—¼" | 24—¼" | 40—¼" |
|---|---|---|---|---|
| Section of Wires (sq. in.) | .04909 | 0.589 | 1.178 | 1.963 |
| Final Force—after losses (lb.) | 7,070 | 85,000 | 170,000 | 283,000 |
| Initial Force—before losses (lb.) | 8,250 | 99,000 | 198,000 | 330,000 |
| Overstressing Force (lb.) | 9,420 | 113,000 | 226,000 | 377,000 |
| Ultimate Force of Tendon (lb.) | 11,780 | 141,380 | 282,760 | 471,260 |

# PRESTRESSED CONCRETE

## COVERS EVERY OPERATION

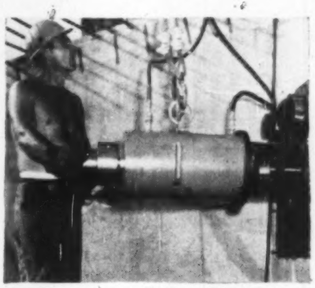
**1. Force development calculations**—from the design engineers' basic data Ryerson furnishes the necessary computation verifying that forces developed by our system meet all requirements of your plans and specifications.

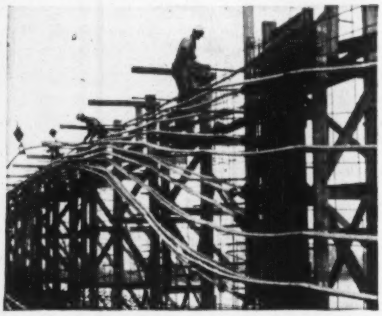
**2. Detailing and placement plans**—Ryerson prepares detailed placing drawings for the tendons, grout connections, grout vent pipes, anchorages, and other components. All units are clearly tagged and identified in accordance with these drawings.



**3. Quality-controlled tendon and anchorage assembly**—all units are fabricated under carefully controlled conditions. We can furnish test reports on every heat of wire used in the tendon. In every processing step we maintain close quality controls that assure compliance with all your specifications.

**4. Equipment for precise stressing and positive grouting**—we furnish all equipment, including easily operated jacks, precise instruments for measuring stress and elongation, hydraulic pumps, drop mixers, etc.





**5. Field labor procedures**—experienced Ryerson personnel assist in the supervision of every step of the post-tensioning operation, from accurate placement of tendons through precision stressing and anchoring to final positive grouting.

**6. Dependably scheduled deliveries**—Ryerson's nationwide distribution facilities give unequaled convenience and flexibility. Materials and equipment arrive at construction site in accordance with job progress.

## RECENT CONSTRUCTION PROJECTS USING RYERSON POST-TENSIONING

**WANAPUM DAM DEVELOPMENT, EPHRATA, WASHINGTON**
BUILDER—Public Utility District of Grant County, Washington
ENGINEER—Harza Engineering Co., Chicago
CONTRACTOR—Grant County Constructors

**UNITED AIR LINES EXECUTIVE OFFICE AND TRAINING CENTER, CHICAGO**
ARCHITECT—Skidmore, Owings & Merrill
CONTRACTOR—Gust K. Newberg Construction Co.

**ONEIDA LAKE BRIDGE**
BUILDER—State of New York, Dept. of Public Works
ENGINEER—Summers, Munninger and Molke
CONTRACTOR—Terry Contracting, Inc.

**CHICAGO EXPOSITION CENTER**
BUILDER—City of Chicago
CHIEF ARCHITECT—Alfred Shaw
STRUCTURAL ENGINEER—Carl Metz
CONTRACTOR—Gust K. Newberg Construction Co.

**NAVAL AIR STATION TAXIWAY, LEMOORE, CALIFORNIA**
BUILDER AND ENGINEER—U. S. Navy
CONTRACTOR—Griffith Company

**NORTHWEST EXPRESSWAY OVERPASS, CHICAGO**
BUILDER AND ENGINEER—Cook County (Illinois) Highway Dept.
CONTRACTOR—Thomas McQueen Co.

**LAKE MEADOWS SKATING RINK, CHICAGO**
BUILDER—New York Life Insurance Co.
ARCHITECT AND ENGINEER—Skidmore, Owings & Merrill
CONTRACTOR—Turner Construction Co.

**GEORGE WASHINGTON BRIDGE APPROACHES, NEW YORK CITY**
BUILDER AND ENGINEER—Port of New York Authority
GENERAL CONTRACTORS—Gull Contracting, Inc.; Johnson, Drake & Piper
SUB-CONTRACTOR—Precrete, Inc.

**MISSION VALLEY FREEWAY BRIDGES AND PRESIDIO PARK OVERPASS, SAN DIEGO**
BUILDER AND ENGINEER—State of California, Dept. of Public Works, Div. of Highways
CONTRACTOR—W. F. Maxwell Co.

**SANTA MONICA AND SANTA ANA FREEWAYS INTERCHANGE**
BUILDER AND ENGINEER—State of California, Dept. of Public Works, Div. of Highways
CONTRACTOR—Peter Kiewit Sons Co.

**CENTURY 21 COLISEUM, SEATTLE**
BUILDER—State of Washington, Dept. of Commerce & Economic Development
ARCHITECT—Paul Thiry, Seattle
CONTRACTOR—Howard S. Wright Construction Co., Seattle

**LEHIGH PORTLAND CEMENT STORAGE BUILDING, MITCHELL, INDIANA**
ENGINEER AND CONSTRUCTOR—Fruin-Colnon Contracting Co.

**MULTI-LEVEL PARKING DECK, HAMMOND, INDIANA**
BUILDER—Triangle Parking Corp., Hammond
ENGINEER—DeLeuw, Cather & Co., Chicago
CONTRACTOR—Roy C. Clark, Inc., East Chicago, Indiana

**ROOF STRUCTURES, CONEY ISLAND POLLUTION CONTROL PROJECT**
BUILDER—City of New York, Dept. of Public Works
ENGINEER—Greeley & Hansen, Chicago
Consultant—Frank Klein, Chicago
CONTRACTOR—Lasker-Goldman Corp., New York City

**GRINNELL COLLEGE FINE ARTS CENTER, GRINNELL, IOWA**
ARCHITECT—Skidmore, Owings & Merrill
CONTRACTOR—The Weitz Company, Inc., Des Moines

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# Waste Well Goes Down Over Two Miles

The deepest waste-disposal well ever sunk will be constructed shortly by the Omaha District Corps of Engineers for waste effluent from the Rocky Mountain Arsenal near Denver. Bids will be opened next week on a project that involves sinking a shaft, starting with 24-in. diameter at the surface, approximately 11,400 ft to pre-Cambrian granite.

The following week, bids will be opened on a companion project—a treatment plant to remove colloidal solids from the effluent before its injection underground.

Total cost of the two jobs is expected to be $1.4 million.

The well represents the third go-around in handling a waste problem that dates back to the establishment of the Rocky Mountain Arsenal in the early days of World War II. The plant, which produces nerve gas, is on standby, save for a portion leased to Shell Oil Co. for insecticide production. Both the military work and Shell's manufacturing process result in waste whose dominating chemical constituent is sodium chloride. Waste outflow is 165 gal per min.

The first disposal method was to dump the waste into a pond. The belief was that evaporation gradually would increase the chemical concentration, but that the chemicals would not go into the ground.

Subsequently farmers as far as three miles from the reservation boundary, who tap a 60-ft-thick aquifer lying 60 to 90 ft deep for irrigation, complained that chemicals in the ground water were injuring their crops. To these objections have been added complaints that domestic drinking water is being adversely affected.

The first complaints were followed in 1956 by construction of a 90-acre waste disposal pond sealed with an asphaltic membrane to keep wastes from seeping into the ground (ENR Nov. 22, 1956, p. 40). While the pond has accomplished its role of containing the chemicals, it now is near capacity.

Hence the well. Its purpose is to go far below any useful formation into a stratum barren of value, practically limitless in absorptive capacity and so isolated—both by depth and by geology—that injected waste will be permanently lost.

Army Engineers look to the Fountain formation for these attributes. Tourists who have visited the amphitheater of the Park of the Red Rocks southwest of Denver have seen the formation as a gaudy red outcropping. Twenty miles away at the arsenal, the formation is 11,000 ft underground, lying just atop the basic granite.

Army Engineers say the Fountain formation has these advantages:

- It is a porous sandstone that geologists say should be absorptive.
- It is 1,000 ft thick, indicating great capacity.
- It is not tapped for water supplies within hundreds of miles.
- It is topped by a close-grained and impermeable shale stratum more than 3,000 ft thick. This should effectively prevent wastes from migrating upward into useful strata.

The cased diameter of the hole will range from 20 in. for the first 125 ft to 13⅜ in. below 2,000 ft. Injection will be through a 5½-in.-dia tube set inside the well. It will go to 9,000 ft and will be packed at that depth. Elaborate precautions will be taken against failures that would permit wastes to bleed off into useful strata.

The injection tubing will be heavy—23 lb per ft—and is figured to be corrosion resistant for a 50-year period. The annulus between the well casing and the injection tube will be flooded under pressure; recording gages will indicate any pressure changes, which might signal leaks.

Below the packing, the well casing will be shot at appropriate places, as indicated by the tests, to permit the wastes to escape into the porous rock.

The treatment plant for the wastes is designed to remove colloidal material that could quickly plug the well. The particules range in size from 0.5 to 5 microns. The well, treatment plant and pond will all be tied together so that wastes may, or may not, be run through the pond before injection. Injection capacity will be 400 gpm.

Col. Harry G. Woodbury is Omaha District Engineer. J. O. Ackerman is district chief of engineering, and Gordon D. Haugse is project engineer.

# Utilities Spend $10 Million on A-Power

Seven New York utilities last week took a hopeful step forward in the quest for competitively priced nuclear electric power.

Combined under the name Empire State Atomic Development Associates, Inc., (ESADA), they anted up $10 million to sponsor parallel research efforts by two atomic-minded firms—General Electric Co., and the General Atomics Division of General Dynamics Corp.

ESADA's research race will pit boiling-water reactors against gas-cooled, graphite-uranium reactors in the production of 1,000-deg steam at pressures between 1,500 psi and 2,000 psi. The utility companies say this superheated steam is needed to run small diameter turbines, which they consider necessary to keep capital costs low enough to make atomic power competitive with fossil fuel power.

ESADA hopes that by 1963 this competitive research and development program will blueprint economic atomic power plants with capacities between 300,000 and 500,000 kw. If the program is successful, the first of these plants—largest ever built in the U. S.—would be in operation by 1967.

The biggest construction expenditure for now will be an $8-million boiling-water reactor to be built at GE's Vallecitos, Calif., research center. This 5,000-kw reactor will be used to superheat steam produced by an existing A-power plant, now producing power for Pacific Gas and Electric.

The seven utilities will contribute $5.75 million towards this reactor while GE and, possibly, the Atomic Energy Commission will spend the balance.

ESADA's $8.7-million contract with General Atomics provides for a $4.5-million share to be paid by the electric companies and the other $4.2-million to be put up by General Dynamics' nuclear division. This agreement does not cover any construction, but is an outright research and development effort aimed at the same goal—nuclear electricity cheap enough to compete with conventional steam plants.

General Atomics will concentrate on development of a gas-cooled, graphite-uranium reactor. The firm is about to start construction of a 40,000-kw reactor of this type at Peach Bottom, Pa., as part of a separate endeavor sponsored by 53 private utilities and the AEC.

Empire State Atomic Development Associates, Inc., is comprised of: Niagara-Mohawk Power Corp., Syracuse; Long Island Lighting Co., Mineola, L. I.; New York State Electric and Gas Corp., Binghamton; Consolidated Edison Co. of New York, New York City; Rochester Gas and Electric Corp., Rochester; Central Hudson Gas and Electric Corp., Poughkeepsie; and Orange and Rockland Utilities, Inc., Nyack.

Despite acid fumes and Ohio winter...

*M50*® paint applied in Spring matches color of *M50* paint applied previous Fall

One of the many outstanding properties observed during National Lead exposure tests of *M50*® basic lead silico chromate pigment paints was a remarkable resistance to fading. The practical value of this property is brought out by an event in the repainting of The Harvard-Dennison Bridge in Cleveland, Ohio.

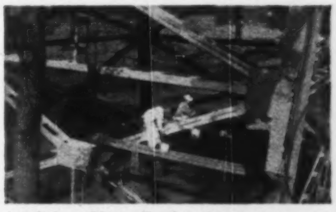
At the close of the 1958 painting season, this repainting had been only partly completed. In Cleveland, that Winter was particularly hard on paint . . . periods of heavy precipitation and cold alternating with warm, sunny days. And . . . notice the smoke in the picture above... this particular bridge lies in the direct path of acid fumes from the stacks of a nearby chemical plant.

Despite all this, when the contractor began to paint again in the Spring, no color difference could be detected at the boundary between the previously applied *M50* paint film and the new.

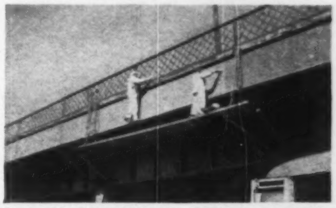
**What makes this color retention so remarkable is that it is obtained in a finish paint that also provides the rust inhibition of a standard primer. Only paints made with basic lead silico chromate pigment combine the anti-corrosion action of a primer with the weather resistance, durability and tintability of a finish paint.**

***Now, for the first time . . .***

Paint suppliers are providing states, counties and municipalities with true "Defense-in-Depth" against corrosion . . . paint systems with an active rust inhibitor, basic lead silico chromate, in *all* coats, primer, intermediate and finish. If you are not yet acquainted with these modern paints, ask your regular suppliers about them. They're setting new standards for durable metal protection.



Applying *M50* alkyd primer coat over commercially sand-blasted surface.



Grey *M50* alkyd finish coat goes on with complete color uniformity.

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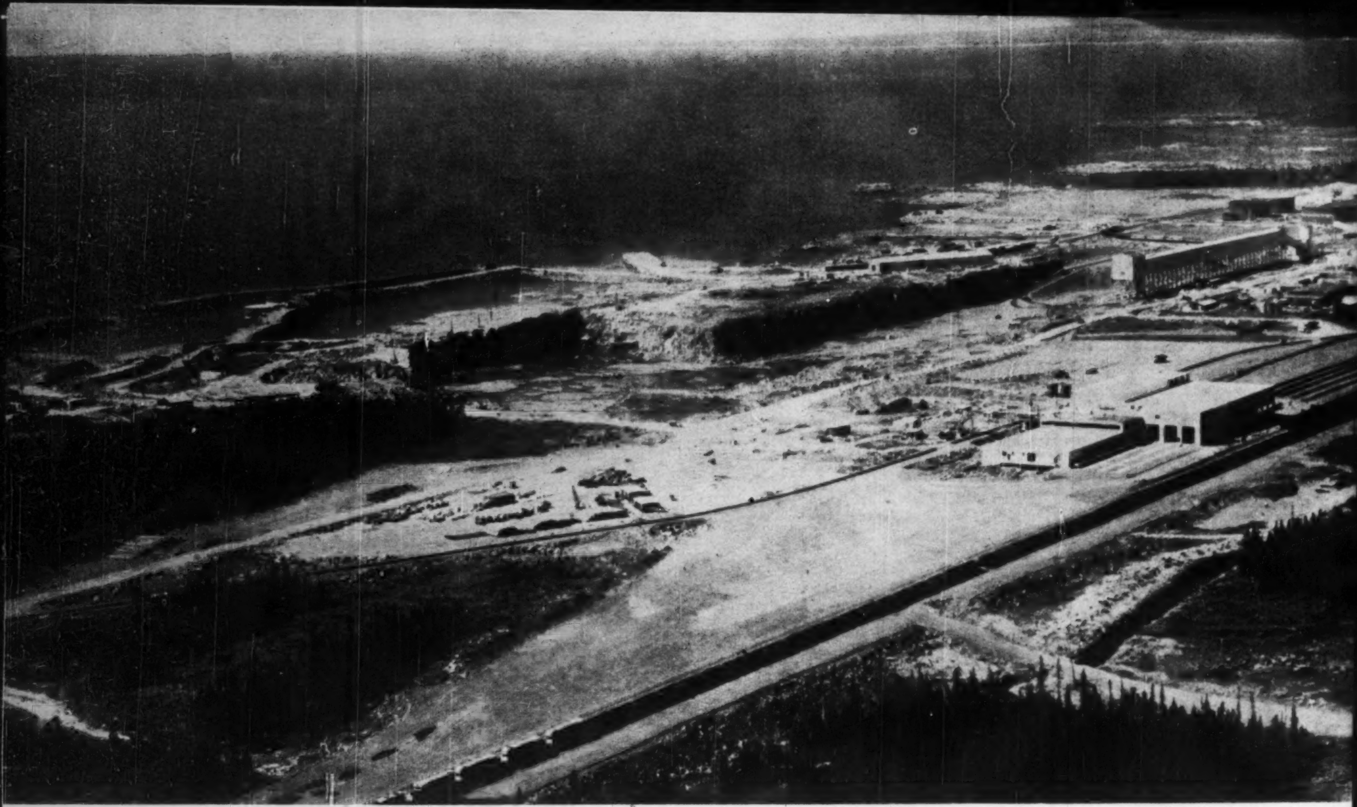


**Contractors work year around to blast new harbor from solid rock . . .**

# Crews Race to Complete Port,

Quebec Province
Port Cartier
Quebec
Montreal
New Brunswick
Lac Jeannine
(Mine and concentrator)
Mt. Reed
Townsite
(Gagnon)
Hart Jaune R.
Hydroelectric Development
Lac Manicouagan
Railroad
Port Cartier
Sept-Iles
Shelter Bay
Townsite and Loading Docks
Gulf of St. Lawrence

**Projects open up a wilderness.**

**By Leo J. Ritter, Jr.**

Deep in the rugged "bush" country of eastern Quebec, veteran construction crews are racing the onset of winter to complete a 193-mile railroad from the Gulf of St. Lawrence to Quebec Cartier Mining Co.'s extensive iron ore holdings near Lac Jeannine.

And on the Gulf, workers are blasting a deep-water port (Port Cartier) out of solid rock to accommodate the world's largest iron ore carriers. Near the old town of Shelter Bay, creation of a harbor where none existed before requires 7 million cu yd of hard rock excavation.

The two projects are part of a $200-million development program by Quebec Cartier Mining Co., a subsidiary of U. S. Steel Corp. In addition to the railroad and port, QCM is opening a large open-pit mine and building a king-sized iron ore concentrator, a hydroelectric project and two completely new townsites, one at either end of the railroad.

---

*ENR's Jack Ritter found plenty of big, rough construction along the new railroad to iron-ore in the rugged country of Quebec's North Shore. This is a hard-rock corner of the world where the winter weather gets to 60 below. It's hardly ideal country for railroad construction (see cover).*

The iron ore deposits under development lie in the Quebec Labrador Trough, which extends from Lac Jeannine to the far northern area of Ungava Bay. The rock is specular hematite, a 30 to 35% ore. Total annual ore production is planned to reach 20 million tons. The concentrator will be one of the largest iron ore beneficiating plants in the world. Power will come from a new 60,000-hp hydroelectric plant on the Hart Jaune River.

Conditions are rugged in this section of Quebec. Temperatures range from —60F in the dead of winter to nearly 100F at the summer peak. The country is rough and broken, with elevations ranging from sea level to above 3,000 ft along the rail line. There is plenty of water—small and large lakes, sizable rivers, and swamps—and plenty of rock. Aside from limited lumbering operations near the coast and a few roving bands of Indians, the area was unpopulated until QCM moved in. Travel is predominantly by air.

According to Lloyd J. Severson, president of QCM, who has lived with the project from its early prospecting and pioneering stages, the company and its consultants made extensive use of aerial photogrammetry in exploratory

. . . and drive 193-mile railroad through wilderness of eastern Quebec.

# Railroad

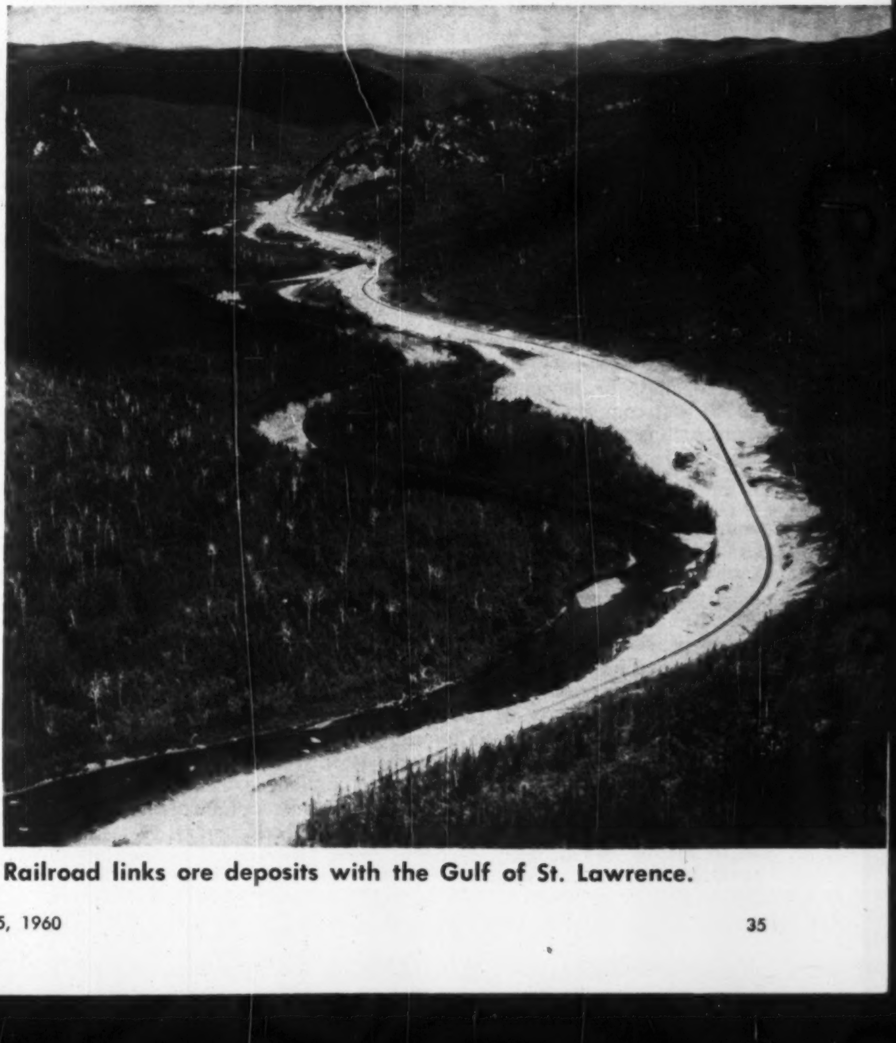
location and design phases of the multisided operation. Canadian Aero Services, Ltd. of Ottawa, contracted for the largest single use of aerial surveying services ever done by a mining company.

Canadian Aero participated in every phase of exploration and mapping from airborne magnetometer surveys and subsequent reconnaissance mapping to final location mapping and field staking of the railroad centerline.

After the quality and size of the iron deposit had been established, the survey company supplied information needed by QCM's consulting engineers. Surveying and mapping for the railroad were done in four phases:

1. In 1956, Canadian Aero's engineers utilized existing photography for a preliminary study of some 25,000 sq miles. The study revealed problems to be encountered in design and construction; 13 possible routes were selected for further consideration.
2. New detailed photography was flown at 30,000 ft (scale: 1 in. equals 1 mile). A small surveyor-photo interpreter team went in by air to establish ground control points and obtain supplementary information. These studies reduced the alternate routes to three.

*(Turn the page)*



Railroad links ore deposits with the Gulf of St. Lawrence.

3. Reconnaissance topographic maps for the three routes were developed at a scale of 1 in. equals 3,000 ft with 25-ft contours. Canadian Aero and TAMS (Tippets - Abbett - McCarthy-Stratton of New York City, principal railroad engineering consultants) then selected one final route with alternatives in critical sections.

4. Additional detailed photography was done and topographic maps prepared at 1 in. equals 200 ft, with 5-ft contour intervals. The detailed maps covered a route 1.5 miles wide and 200 miles long. Similar maps were prepared for the mine site, town sites, harbor area, and hydroelectric project.

Final airphoto analysis by TAMS specialists yielded information relative to locations of bedrock, soil types, drainage, sources of borrow materials, and potential trouble spots. TAMS used the photo interpretations and the topographic maps to establish the railroad centerline and estimate earthwork quantities.

The preliminary line was staked, bench marks established, and profiles obtained on the ground. Canadian Aero prepared additional detailed plans for bridge and tunnel sites.

TAMS, in association with Montreal consulting engineers Cartier, Cote and Piette, then completed design of the railroad.

The railroad is a single track line with six passing sidings. The track comprises 132-lb rail laid on hardwood crossties on top of crushed gravel ballast. Each passing siding has a back track to accommodate cars set off along the line, work trains, and so on.

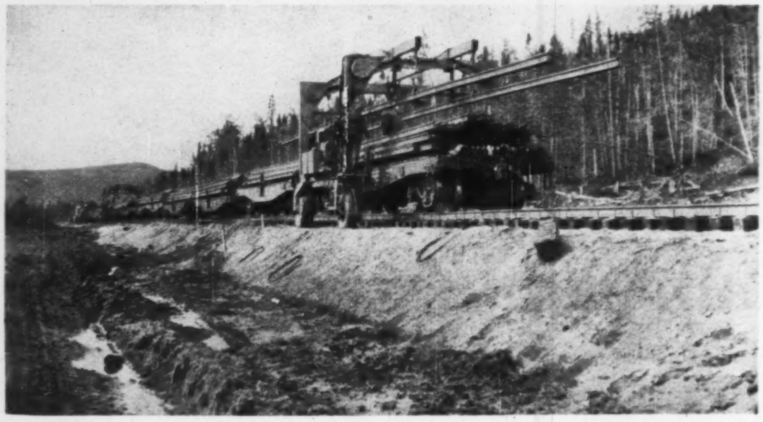
The maximum grade against loads (southbound) is 0.4%, compensated for curve resistance. This grade limitation was established by the braking force required for a trailing load of nearly 16,000 tons for each 125-car train carrying concentrate from the mill to the harbor. Against empties (northbound) the maximum grade is 1.35%, not compensated for curve resistance. Sharpest curve is less than 7 deg, with few curves over 5 deg 30 min. About half the line is laid on rock and about half is curve track. Winding nature of the route is indicated by the fact that the airline distance between terminals is 141 miles, against 193 along the centerline.

Construction of the line to high standards of curvature and grade required 14 million cu yd of excavation, half of it rock.

Most of the track is laid in 78-ft rail lengths, with each length formed of two 39-ft standard rails butt welded in a plant set up at Port Cartier.

There are more than 1,000 culverts on the line, ranging in diameter from 36 to 144 in. All are made of corrugated metal.

**Winter work is rough along the railroad right-of-way.**



**Straddle carrier lifts and transports 78-ft welded rails.**

Seventeen steel and concrete bridges have been built, including through and deck girders, through trusses and multiple span trestles. Longest bridge is 880 ft.

Five tunnels range in length from 350 to 1,430 ft. Tunnels are unlined, except for one in which permanent steel lining was installed.

Pitts-Foley, a joint venture of C. A. Pitts Construction (Quebec) Ltd. and Foley Brothers (Canada) Ltd., was awarded the prime contract for construction of the railroad in September, 1958. Both firms are subsidiaries of American companies: Pitts is controlled by Merritt-Chapman and Scott; home office for Foley Brothers is Pleasantville, N. Y.

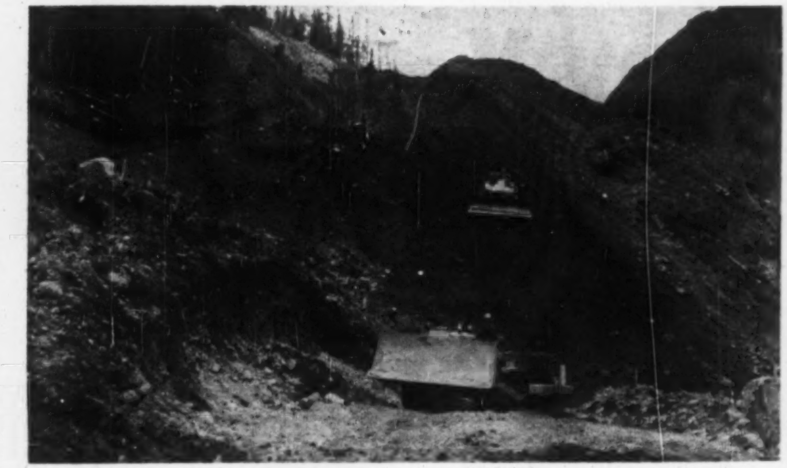
Four subcontractors are handling major phases of the work for Pitts-Foley. They are:

1. Temiskaming-Inspiration Co., Ltd., North Bay, Ont.—tunnels.
2. Mannix Co., Ltd., Calgary, Alta.—track work and ballast.
3. Arbec-Campbell Co., Ltd., Montreal, Que.—bridge substructures.
4. Dominion Bridge Co., Ltd., Montreal, Que.—structural steel erection.

To complete the project on time, contractors battled the traditional enemies of heavy construction in undeveloped regions—inaccessibility and extreme weather conditions. Proof of their victory will come next month, when the first loaded ore cars come rolling down the line from the concentrator.

At the beginning of the project, the only ground access to wheeled vehicles was about 60 miles of private road from Shelter Bay to a lumber camp. After location of the rail line had been settled, initial step was to carve out a pioneer access road all the way to the mine site. Paralleling the railroad over most of its length, this road has been maintained throughout the construction period as a primary supply artery.

Contractors, consulting engineers, and QCM established a base camp at mile six on the railroad. The base camp has complete maintenance facilities, warehouse stocks of parts and supplies, living quarters, administrative offices and a centralized radio set-up. It also has a modern 18-bed hospital



**Grid rollers compact fills to high density.**

**Special "sled" lifts ties and tracks to place ballast.**

that serves not only project personnel but the rapidly growing community of Port Cartier. Additional contractor camps were built along the line as the work progressed from the southern end toward the mine. The consulting engineers established two divisions and eight residencies, each covering about 25 miles.

Work went on year around, much of the time on a two-shift per day basis.

At the peak of construction activity last summer about 2,500 contractor employees were scattered along the project, principally on the northern half of the line. The consultants had another 325 people on the job.

Supply presented a major problem, especially during the long winter season. Equipment, parts and supplies brought in during the winter months had to come by air or by ship from ice-free Atlantic ports. Although the St. Lawrence and major ports like Quebec and Montreal are ice-locked in winter, the Gulf of St. Lawrence is salt water and the temporary harbor at Port Cartier was kept open. Work sites and camps were supplied from the access road, by planes utilizing airstrips built along the line, and—later—by supply trains operating over the completed section of the line.

Rock excavation and tunnel work comprise a major part of the project. Blast holes were drilled by crawler-mounted wagon drills and jackhammers. Holes were up to 2½ in. in dia, with varied spacing and number of holes per blast. Delay caps were used, and rock was generally broken to usable size. Crawler-mounted shovels load the blasted materials into heavy duty rear dump trucks. Much of the shot rock is incorporated in the lower sections of fills.

Tunnel construction presented relatively few problems, except for the northernmost bore in the canyon area near mile 157. Here, unsound rock in the tunnel roof forced the installation of a permanent steel lining. Crumbling rock at one portal of the adjacent tunnel made it necessary to stabilize the rock face with anchor bolts and steel mesh.

Fills are designed to minimize frost action and settlement. Non-frost-susceptible material was required in the top 4 ft of fills where the water table is high and no subdrains were used. Depth of this material was less in more favorable locations.

The contractor compacted fills to 90% modified AASHO maximum density, except for the top 6 ft, where 93% density was required. Soil in cuts is predominantly preconsolidated glacial till. Silty to sandy in texture, it is extremely sensitive to remolding; its in situ moisture is close to optimum. The disturbed soil is difficult to handle and almost impossible to dry out. As a result, wide use was made of granular borrow materials; scarcity of suitable deposits made long hauls necessary over much of the project.

A fleet of tractor-drawn and self-propelled scrapers handled earth excavation. The contractor used Hyster grid rollers drawn by crawler tractors to compact fills. Vibratory tampers were used on granular culvert backfills.

To control seepage flow and frost action, designers made extensive use of 6-in. corrugated metal subdrains, installed as interceptors on the high side of the line, usually at a depth of 6 ft below the surface. The subdrains proved to be effective during the 1959-60 winter season.

Mannix crews use modern equipment in a fast-moving mechanized operation to lay track and ballast on the prepared roadbed. A crawler tractor with log-handling front end attachment dumps pallets of 20 ties at intervals along the line. Workers space and align the ties by hand and set track plates.

A straddle carrier lifts two of the welded rails at a time from a flat car, carries them forward and places them on the ties. Rails are aligned and initial spikes driven by hand. Additional spikes are driven by a pneumatic "spike-master" that rides the rails.

Crushed gravel ballast is then spread over the track and rails. A mechanized "sled" that rides the rails lifts the ties and rails, and vibrates and consolidates the ballast beneath them. After the sled has passed, additional ballast is spread beneath the ties as necessary and track is given its final alignment.

Slides and the sloughing of cut slopes are expected to provide the majority of maintenance problems after the line is opened to traffic.

The three consulting firms on the rail project work together in an unusual pattern. TAMS—as prime consultants—play a supervisory role; their personnel fill positions of project manager, assistant project manager, one division engineer, and eight resident engineers. U. V. Engstrom is project manager, with H. B. Christensen as his assistant.

Cartier, Cote and Piette have respon-

(*Story continued p. 40*)

# DOUBLE GRAY®-X gives you on your

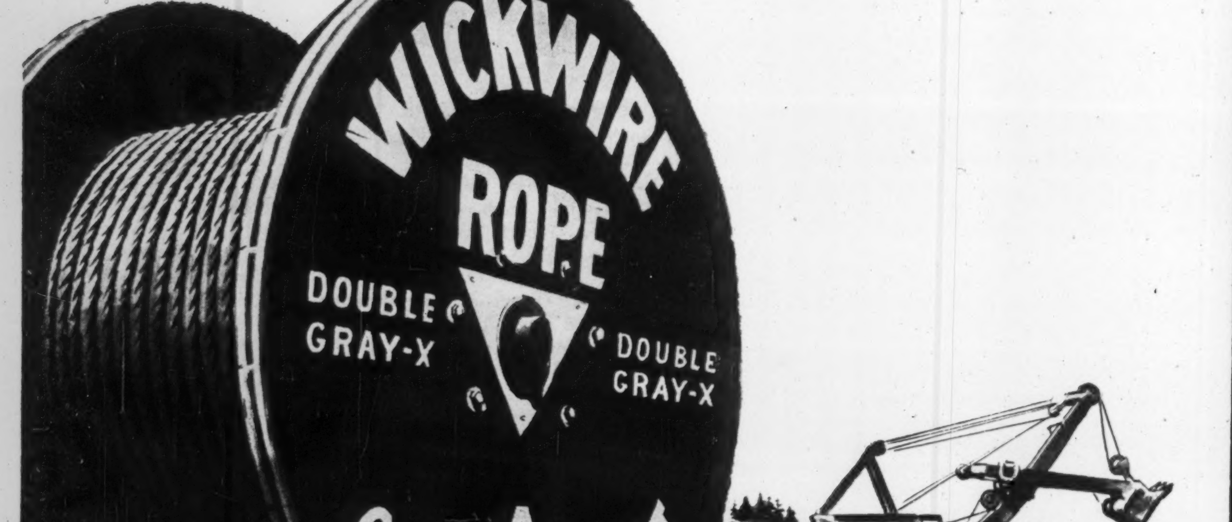
Today, more and more contractors are specifying CF&I-Wickwire's Double Gray-X to replace worn out wire ropes on their equipment. The reason is simple: Double Gray-X has a longer life expectancy than ordinary wire ropes.

Wickwire's new wire drawing technique, which includes the use of molybdenum disulphide, assures a longer-lasting wire rope. And Double Gray-X is made from *Extra* Improved Plow Steel which gives it *extra* high breaking strength. Double Gray-X has:

**MOLECULAR SHIELD**—The use of molybdenum disulphide in the wire drawing results in a shield several molecules thick which lubricates the individual wires and prevents them from grinding against each other when the rope operates. Less internal friction means more rope life.

**SMOOTHER WIRE SURFACE**—Before Double Gray-X, the most carefully drawn rope wire contained minute surface imperfections. Wickwire's new wire drawing technique improves the surface finish. Smooth surfaced wires provide better resistance to fatigue.

**EXTRA TOUGHNESS**—Molybdenum disulphide lubricates the wires during the drawing process. Less power is required and less heat is generated during this operation. The original inherent toughness of the wires is better preserved.



# longer rope life construction equipment

## *Specific uses of Double Gray-X on construction jobs*

Wickwire's Double Gray-X has superior quality which has actually been proven *in the field.* Because it lasts so long — even under the most rigorous conditions — Double Gray-X slashes downtime to a minimum.. . . keeps your equipment on the move. Double Gray-X is particularly recommended for:

**BULLDOZERS:** Blade control ropes are subjected to heavy punishment; abrasion and bending fatigue are severe because the rope must change position many times in a short period. Double Gray-X has the "reserve strength" to stand up under this treatment and will keep your dozers working extra hours on every job.

**CF&I-Wickwire Recommendation** (blade control ropes): 6x25 FW, Wisscolay, Double Gray-X, Lang Lay, IWRC.

**SHOVELS:** Tension and bending fatigue are the enemies of wire ropes used as hoist lines on power shovels. Double Gray-X's extra-high breaking strength helps alleviate these abuses — an important safety factor to consider when replacing your present hoist lines.

**CF&I-Wickwire Recommendations** (hoist lines): up through ⅝" — 6x25 FW, Wisscolay, Double Gray-X, Regular Lay, IWRC

¾" through 1⅛" — 6x25 FW, Wisscolay, Double Gray-X, Lang Lay, IWRC

1¼" and larger — 6x41 FW, Wisscolay, Double Gray-X, Lang Lay, IWRC.

**DRAG LINE EXCAVATORS:** Drag lines are called on to operate in the toughest possible conditions and are constantly subjected to abrasion and tension. The higher abrasion resistance and extra strength of the wire in Double Gray-X make it particularly suited to withstand these destructive factors.

**CF&I-Wickwire Recommendations** (drag lines): up through ¾" — 6x19 Seale, Wisscolay, Double Gray-X, Lang Lay, IWRC

⅞" through 1⅝" — 6x21 FW, Wisscolay, Double Gray-X, Lang Lay, IWRC

1¾" and larger — 6x25 FW, Wisscolay, Double Gray-X, Lang Lay, IWRC.

Double Gray-X is made in many different sizes and constructions. To reduce your operating costs, you should insist on Double Gray-X. For complete information and prompt delivery, contact the nearest CF&I sales office or your Wickwire rope distributor.

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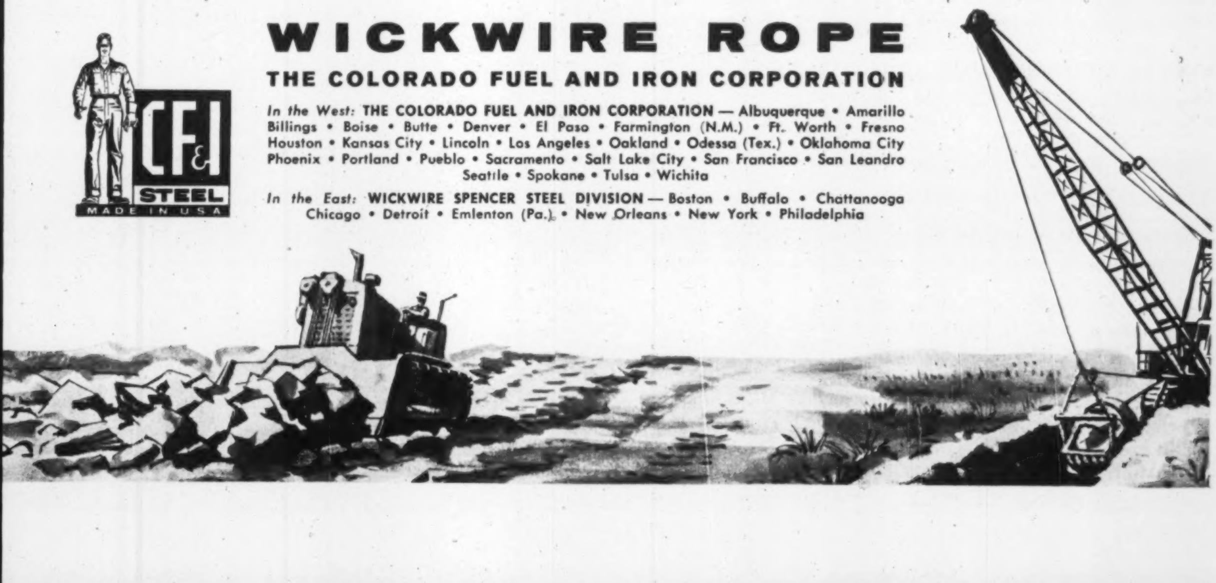
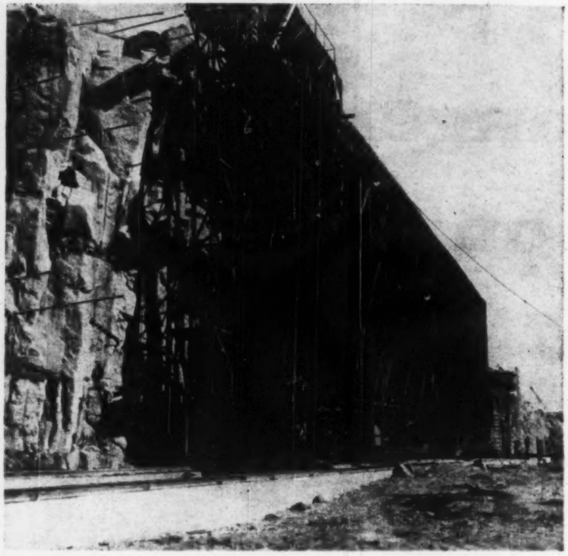


**Bolts and mesh anchor rock at tunnel portal.**



**Rig sets sheet piles for loading berth wall.**

sibility for quality control and inspection. In charge for CCP is Guillaume Piette.

Canadian Aero is responsible for quantity control (surveys and measurements). CAS personnel do construction staking and quantity surveys. In charge is Murray Turner, project manager; his assistant is John Deacon.

For Pitts-Foley, Bill Lofholm is resident manager; Gus Rathert, project manager; and Mark McDevitt, administrative manager.

B. A. Kelly is railroad construction project manager for Quebec Cartier Mining Co.

There is no natural harbor at Port Cartier, the reach of southeast winds is thousands of miles, and wave height in the Gulf of St. Lawrence is theoretically as much as 30 ft.

Choice of this unlikely spot for a major harbor was a compromise, with the cost of additional railroad construction and the cost per ton-mile of ore shipments being major factors.

The harbor comprises a 450- by 2,500-ft basin with a narrow inlet and breakwaters extending into the open Gulf. Eventually, there will be four berths for 100,000-ton capacity ore carriers (largest bottom afloat today is 60,000 tons). Present construction provides one loading berth and one waiting berth. Minimum depth of water in the basin at low tide will be 50 ft.

Beaches on the breakwaters are designed with slopes of 1 on 4 or flatter to dissipate the forces of wave action as effectively as possible. The designers—C. D. Howe Co., Ltd of Montreal—provided similar beaches at both ends of the interior basin to aid in controlling whatever water movement may occur in that area.

QCM initially awarded the port and harbor prime contract to a joint venture—Canit Construction (Quebec) and A. Janin Co., Ltd. Canit-Janin withdrew from the project with the work partially complete; the project is being finished by the Foundation Co. of Canada.

Dewatering and rock excavation are the contractor's major problems in the port area.

The turning basin and berthing area was excavated "in the dry" by leaving in place a massive plug of rock blocking what will be the entrance channel. The contractor installed the circular cell cofferdams that will form the permanent breakwater plus temporary cofferdams and breakwaters to enclose and protect the outer portion of the entrance channel. This area presented a dewatering problem, solved eventually by the use of a battery of high-capacity pumps.

Workmen and machines are now blasting and excavating rock in this area. Final steps will be to remove the rock plug, demolish the temporary cofferdam and breakwaters, and dredge the channel and its approaches.

Concrete mooring bollards are being cast into the solid rock wall where ships will berth and load. At the loading berth, the contractor is installing a retaining wall of steel sheet piling extending from top to bottom of the excavation. The vertical wall is tied to the rock behind it by 40-ft-long steel anchor rods grouted in place. Space between the wall and the rock mass will be filled with lean concrete.

The consulting engineer designed special ore handling facilities for the port, including car dumper, storage shed, conveyor system and shiploader.

An ore train (125 cars, 93 long tons each) coming into the terminal will be spotted by its engines at the car dumper. Trainmen will uncouple the engines, which then will go to the locomotive service and car repair shop. A system of massive hydraulic rams will push the entire train forward one car length at a time onto a rotary dumper. Special swivel couplings allow each car in turn to be dumped without uncoupling. Capacity of this fully automatic operation is 45 cars (about 4,000 long tons) per hour.

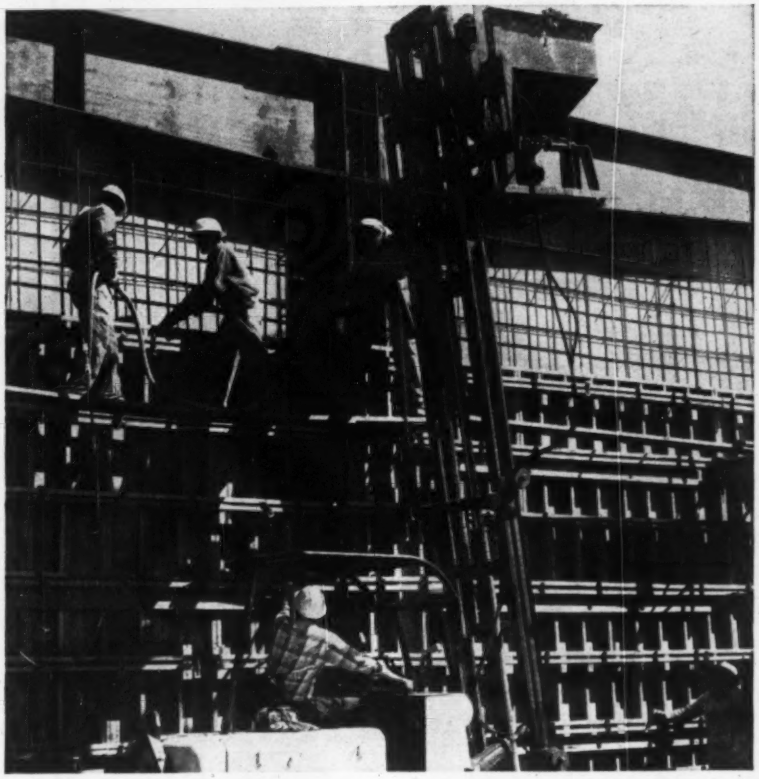
After dumping, the ore will go through a vibrating grizzly and a lump breaker onto a pan feeder, then by conveyor belt with a system of baffles either to an ore storage shed or directly to the shiploader. The system is flexible in operation and the operator can draw ore directly from the stockpile for shiploading.

The conveyor system has a 1,000-ton capacity surge bin that permits the operator to stop loading for a few minutes (as when changing holds in a ship) without stopping the main conveyor system or affecting the car dumping. Rate of ship loading will be about 5,000 tons per hour.

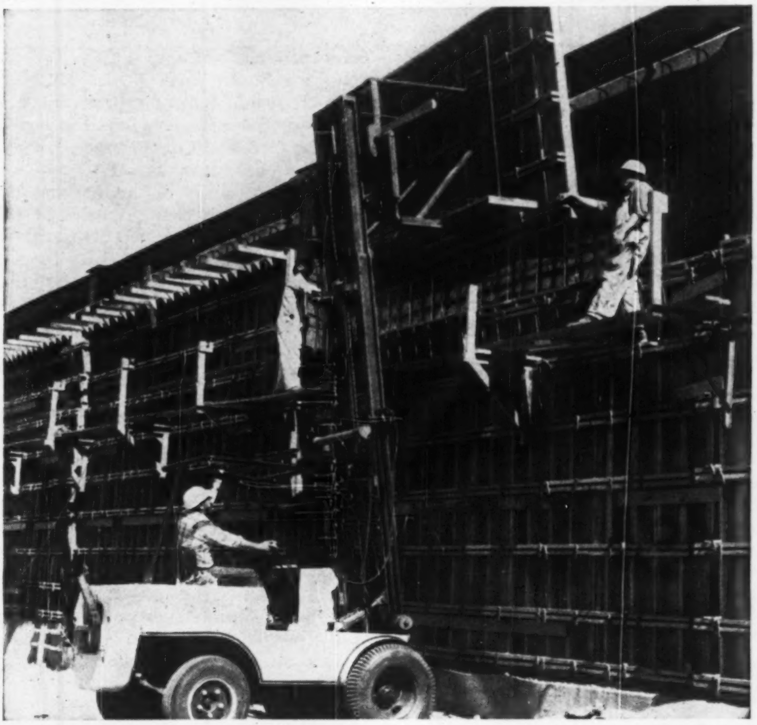
The enormous steel storage shed will accommodate 400,000 long tons of ore. It is 900 ft long, 210 ft wide and 90 ft high. Structral elements are high strength alloy steel. Principal structural feature is a braced two-hinge arch supporting the roof and main crane runways.

The locomotive and car repair shop will be completely equipped for regular and unusual repair and maintenance operations.

Port project manager for Quebec Cartier Mining Co is M. B. Boyden. Manager for the Foundation Co. of Canada is Bert Fuller. C. D. Howe's staff on the job is headed by J. Carr.



CONCRETE GOES DOWN — ¾-yd. bucket is tripped hydraulically by lift operator. Concrete for the walls was 5½ sack with ¾″ to 1½″ aggregate. The fork later stripped panels.



FORMS GO UP — 8′ x 12′ panel is raised for upper lift of wall around Salinas, Calif., plant. 2 x 4 studs and double 2 x 4 walers back plywood-faced panels. Contractor: Haas & Haynie, San Francisco.

# Fork lift cuts cost of poured walls

20′ CONCRETE WALLS, poured-in-place in order to meet exacting sanitary requirements for a food processing plant, were built at a cost comparable to tilt-up by using a modified fork lift truck. For the pouring, done with ready mixed concrete, the contractor required only the lift operator, one assistant and two vibrator operators.

The fork lift, fitted with a steel frame instead of arms, placed the form panels in two lifts: an 8′ x 12′ and a 4′ x 12′ section in the lower lift and an 8′ x 12′ panel in the upper lift. Both were concreted by the same fork lift, equipped with a special ¾-yd. bucket. Before the second lift was poured, the 8′ x 12′ section of the first form lift was stripped, leaving the 4′ x 12′ section in place to hold the upper form.

Concrete for the 5″ thick, 25,000 sq. ft. mezzanine floor also was poured by the fork lift. The versatile rig also was used to strip the forms, after the first panel in each series was hand-stripped.

Smoothly scheduled deliveries, and proper processing of the 1585 cu. yds. of concrete placed by the fork lift, were insured by truck mixers of certified design, capacity, mixing speed and water control accuracy.

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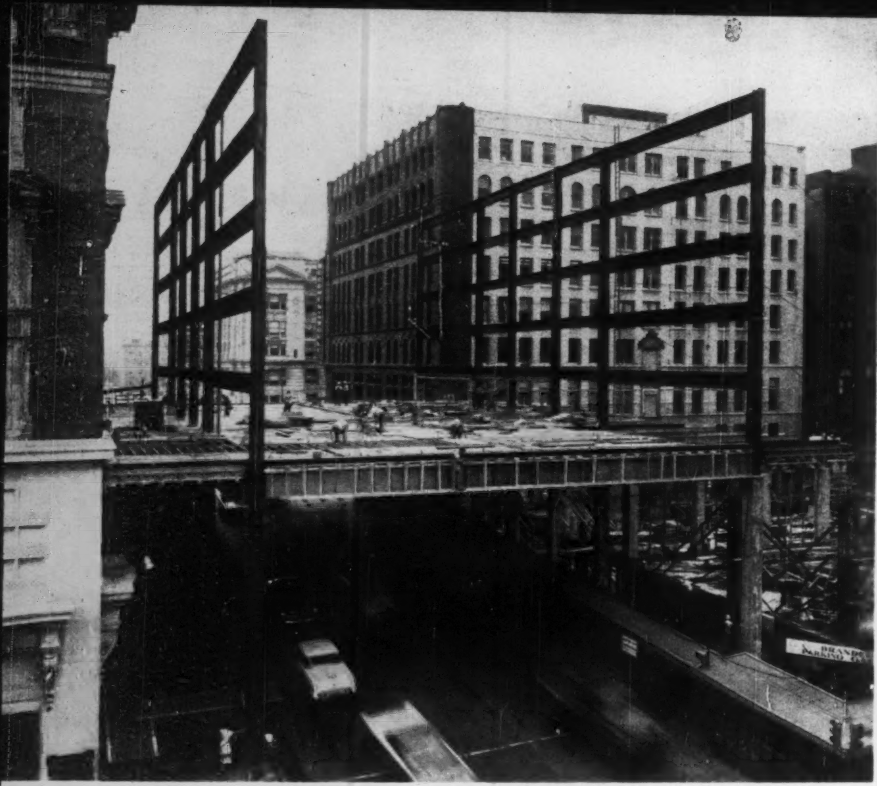
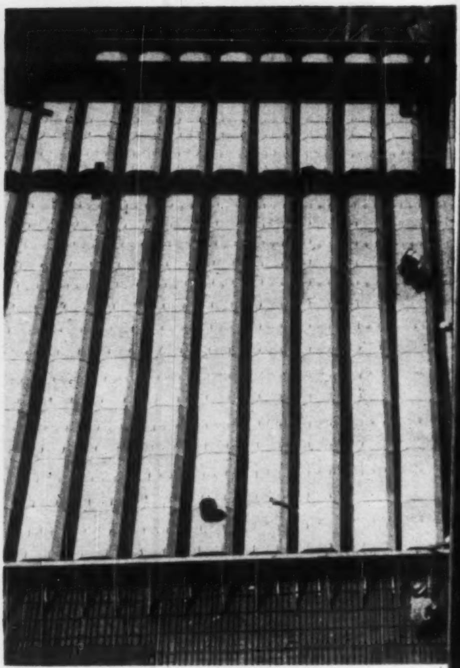
**Willard Concrete Machinery Co., Ltd.**
Lynwood, Calif.
**Worthington Corporation**
Plainfield, N. J.



**OVERPASS PORTION OF GARAGE** has steel framing in place ready for construction of five upper floors with a hollow flat slab method.



**CARDBOARD TUBES,** which create the voids in the 26 in. deep floor slabs, are

# Parking Garage Spans Street,

A building that the owner and city officials believe represents a step forward in the use of metropolitan area space is under construction in the heart of downtown Omaha, Neb. It is a parking garage of which a considerable portion spans one of the city's busy streets to connect, floor by floor, with a department store, whose owner is also owner of the garage building.

In addition to its novel use of city air-rights, the portion of the garage over the street is floored with hollow concrete slabs 26 in. deep whose construction required 21,000 ft of octagonal paper tubes to form the voids. This is believed to be the largest use to date of paper forms in building construction. The tubes themselves are also believed to be the biggest yet used in a building although larger ones have been used for bridge girders.

The other portion of the garage, occupying a lot across the street from the department store, is of different design—concrete beams and girders, with one-way joist floors. It is of the rampless type with sloping floors whereas in the portion of the building over the street the floors are level.

The entire $2 million project is considered a pioneering venture for Omaha if not for the entire country. And it is one expression of a campaign by that city's merchants to combat downtown decay, and compete with peripheral shopping centers. Through their Downtown Parking Association, they have, in less than five years, increased the number of off-street parking stalls from about 8,000 to about 13,000.

Last year J. L. Brandeis & Sons, the city's largest department store, and a prime mover in the Downtown Parking Association, announced plans for this $2 million parking project. It involved:

1. Tearing down the eight-story, 50-year-old Brandeis Theater Building, across Seventeenth Street from the store, and replacing it with a seven-story and two basement structure, 198 x 132 ft in plan. Its basement stories would be store sales area, contiguous with the basement floors of the department store, which already extended under Seventeenth St. The street floor would house a drive-in branch of the Omaha National Bank, and the remaining seven levels would be given over to parking area for 431 cars. The framework would be designed to carry two additional stories of office space to be added at a future time.

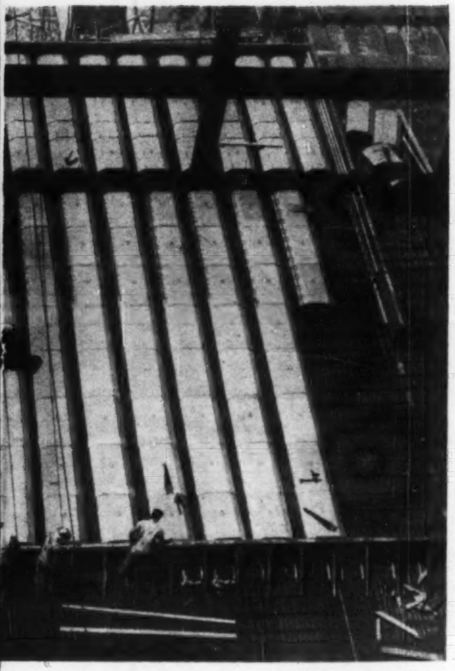
2. Tie the seven-story parking building and the store together with a six-level parking building, 132 x 100 ft, spanning Seventeenth St. as an overpass. It would have a capacity of 222 cars. For the air rights, Brandeis would pay the city $6,300 a year and put up bond to relieve it of liability.

A unique feature of this parking layout, of course, is that a patron of the department store can drive his car to the floor on which he wishes to shop.

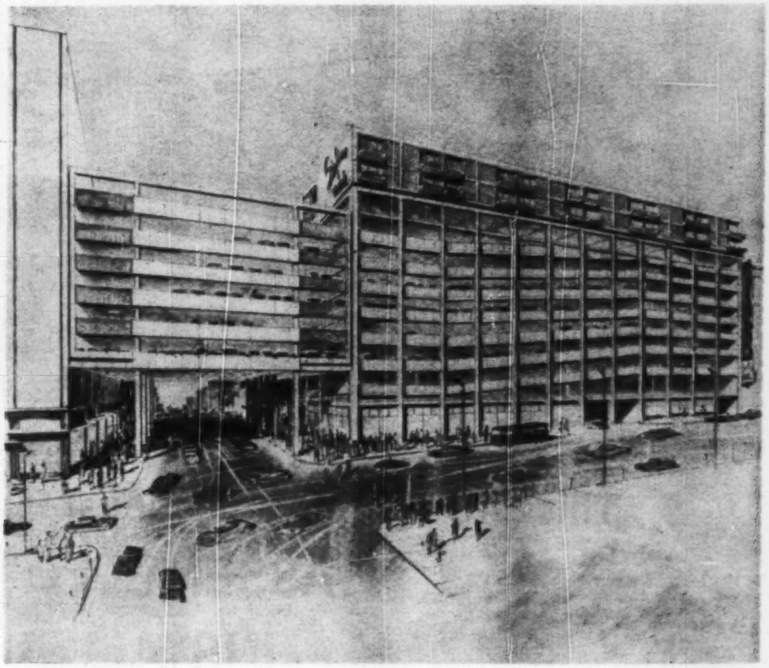
While the main garage building fitted the pattern of other privately constructed parking facilities (among them another Brandeis structure) in the downtown area, the overpass garage was something new and thus aroused considerable discussion. Those who favored it spoke of it as a pioneer, blazing the way to a new type of space usage that could revitalize downtown areas by giving them the compactness and accessibility of a shopping center. Opponents referred to the building as representing a concept which, if carried very far, could convert downtown streets into tunnel-like passageways cut off from fresh air and sunlight and fouled by the exhaust gases of motor traffic.

The only formal objection came in a petition from 12 architects, but when the project came up for approval, both

(*Story continued p.* 46)

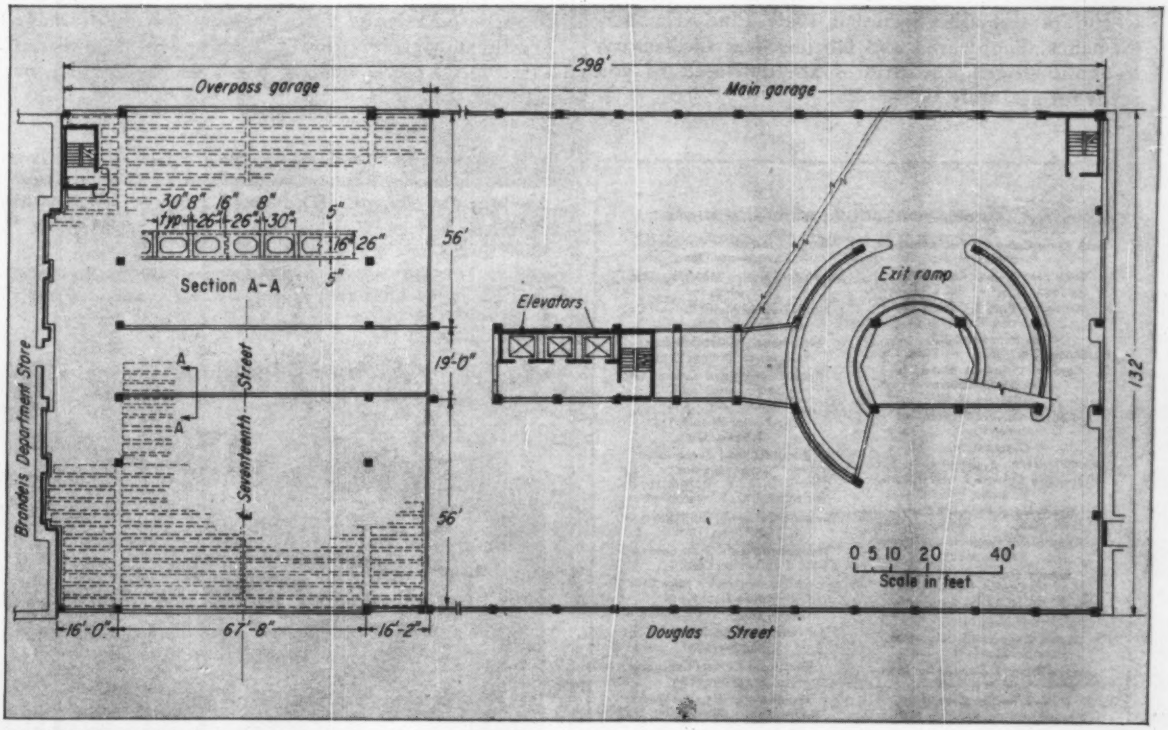


largest to be used in building construction. Here, tubes and reinforcing are installed.

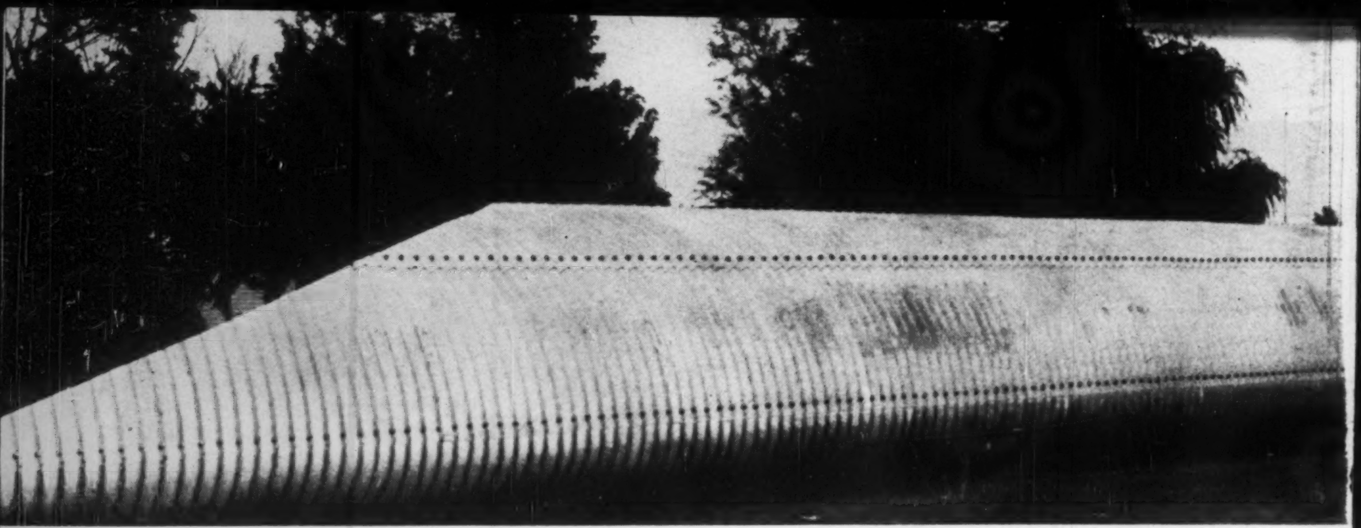


**WHEN COMPLETED,** garage will look like this. Top two stories on main building are for office floors which are scheduled to be added later.

# Uses Thick Hollow Slab Floors


298'
Overpass garage
Main garage
30" typ
8"
26"
16"
26"
8"
30"
5"
16"
26"
5"
Section A-A
A
A
56'
19'-0"
56'
Elevators
Exit ramp
132'
Brandeis Department Store
Seventeenth Street
16'-0"
67'-8"
16'-2"
Douglas Street
0 5 10 20 40'
Scale in feet

**DIFFERENT LAYOUTS** characterize the main garage and the overpass. Floors in main building, of one-way joist type, were used in a helical pattern around the central core. In overpass, hollow slab floors are level.



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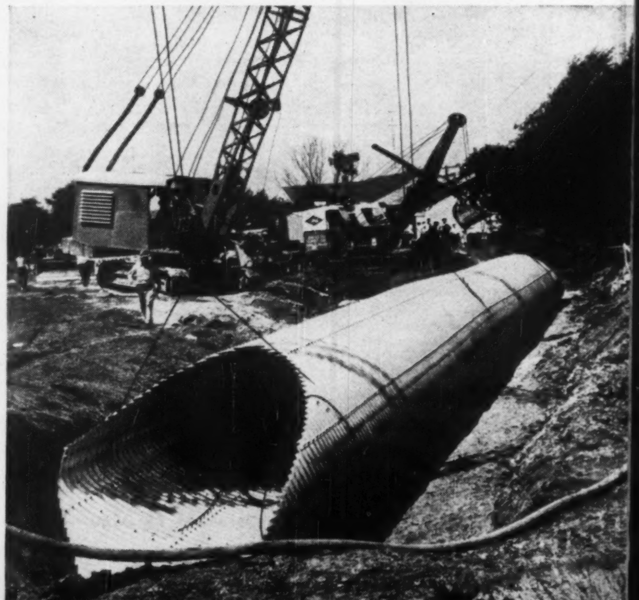
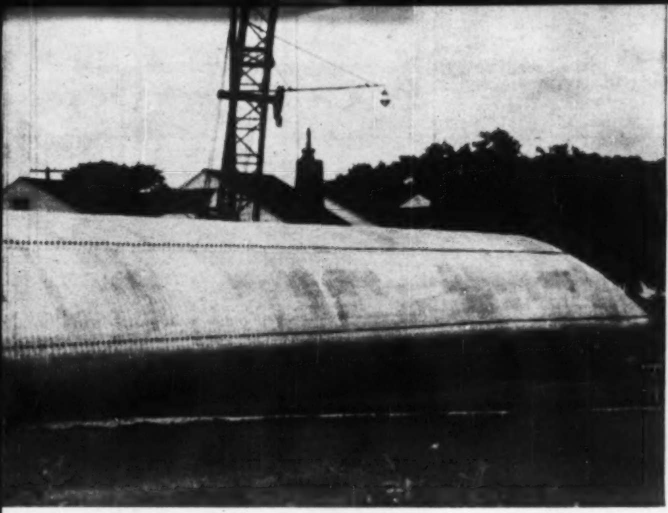
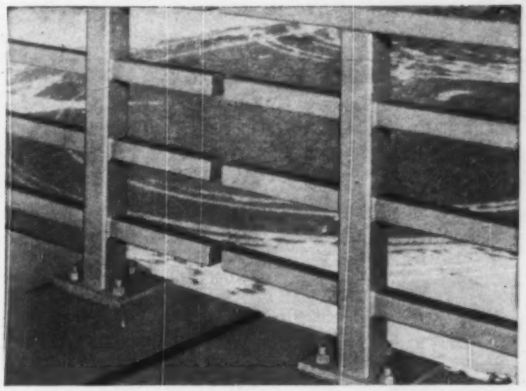
**EASY PLACEMENT.** After assembly on the shoulder of the highway, the 22-ton structure was lifted by cranes into the excavation. Total placement time—2½ hours. The pipe-arch, which replaced a concrete bridge on East Johnson St., Fond du Lac, Wisconsin, was made of 8-gage corrugated sectional plate and measured 10′11″ wide by 7′7″ high.







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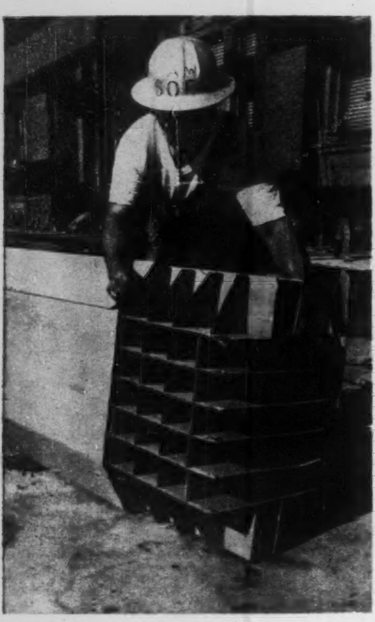
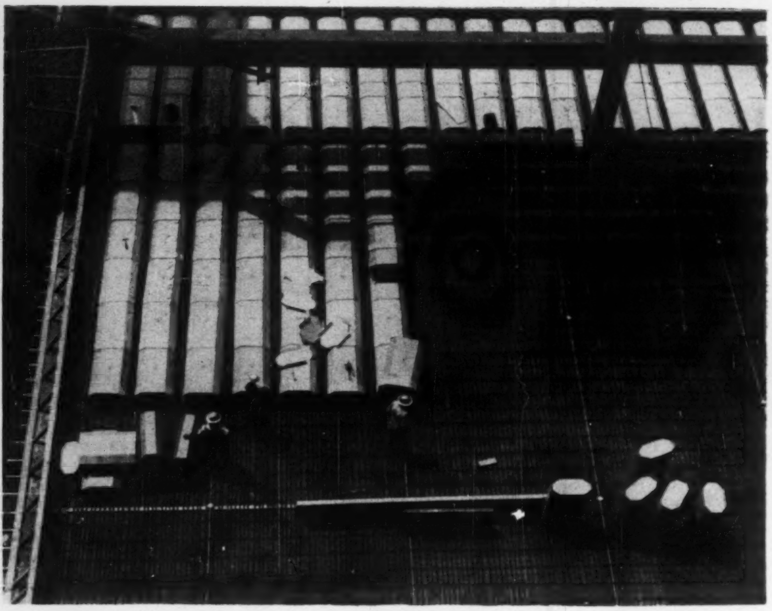


**EGG-CRATE** reinforced tubes, shipped flat, were assembled on the site.



**FOUR-FOOT TUBES ARE STAPLED** together with six-inch sleeves after being aligned on the deck with a string. They are then tied down to prevent flotation.

the city planning board and the city council voted unanimously in its favor.

The design of the overpass building was dictated by the requirement that Seventeenth St. be kept open to traffic while construction was going on overhead. Structural steel was, therefore, used for the first floor framing to avoid the necessity for any shoring in the street. Structural steel columns were also used, carried to the full height of the building and set in the sidewalks 4 ft from the curb line in order to clear an open door of a stopped car. Reinforced concrete floors were used for the other five parking levels, the steel framed first floor providing a platform from which the form shoring could be carried upward.

Placement of the columns inside the curb lines resulted in a span of 67 ft 8 in. for the 48 in. deep girders over the street. Shallower rolled beams cantilever from the columns over the two sidewalks to bring the overpass flush with the store on one side of the street and against the main parking garage at the other. Longitudinal girders on the building centerline and transverse fill-in beams complete the structural steel framing of this first floor over the street.

All of this structural steel (about 750 tons) had to be set at night and within a period of two weeks, to comply with a city ruling. A 35-ton truck crane with a 130 ft boom was used for the erection. Only as much steel as could be erected in a single night was allowed to be brought to the job. It was trucked about five miles from the supplier's yard with a police escort.

But it is the five upper floors of the overpass building that are the distinctive feature of the project. They are 26-in. thick flat slabs covering the entire 100 x 132 ft area and supported only by the steel beams that run between the columns on the sidewalk lines. This long span construction was made possible by the use of lightweight aggregate concrete and the hollow section slabs.

Employed in the floors were approximately four miles of paper tubes of an octagonal shape, 30 in. wide x 16 in. high. Set on 38 in. centers and running parallel to the 100-ft width of the building, their use resulted in a 5 in. slab of concrete above and below the tubes joined by an 8-in. thick web or joist portion between each pair of tubes. A solid slab would have weighed 240 lb per sq ft. The hollow slab weighs 145 psf.

In constructing one of these floors a flat deck form was shored up from the floor below, and on this was laid the reinforcing for the lower slab of the hollow floor section ($1\frac{1}{8}$ in. bars on 4 in. centers plus $\frac{1}{2}$ in. temperature bars crisscrossed on 15 in. centers) and the reinforcing for the vertical webs or joists. The latter consists of stirrups of No. 3 bars on 11 in. centers tied together at their four corners by $\frac{1}{2}$ in. longitudinal bars.

Coincidental with the placing of this reinforcement, 5 in. high chairs of 8 ga wire were set to support the paper tubes, which were installed next. These tubes came from the manufacturer, the Lawrence (Kans.) Paper Co., in 4 ft long units, collapsed flat and bundled. They are made of cardboard with two flat outer plys and an inner-corrugated ply giving a total thickness of $\frac{3}{16}$ in. They are treated with a waterproofing agent which does not alter the appearance or texture of the surface.

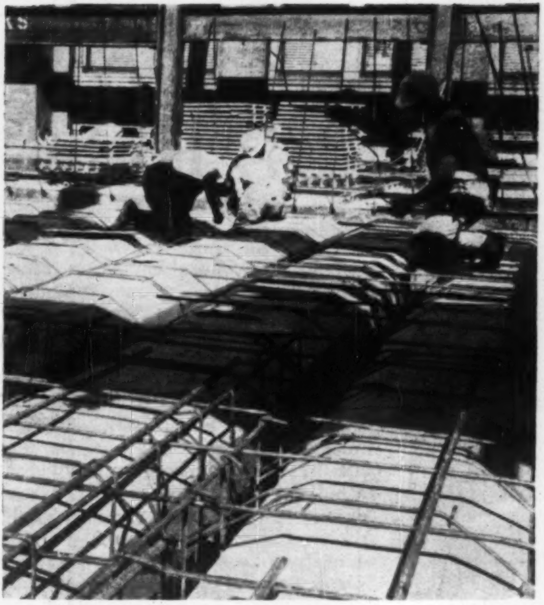
First step in tube installations was to unfold the tubes and insert an egg-crate type cardboard reinforcing. End pieces of the tubes were next folded over, tucked in and stapled in place. The tube units were then hoisted to the building floor, lined up in strings, and joined at the butt joints by having a 6 in. wide sleeve stapled on.

It was necessary to anchor the tubes to prevent flotation during concreting, and this was accomplished by tiedowns of $\frac{3}{8}$ in. bars, bent to follow the upper half of the octagonal tubes and attached to vertical rods through-bolted to the bottom form. Where these tiedowns would rest on, and perhaps cut into, the tubes, heavy staples of $\frac{3}{8}$ in. bars 6 in. long are driven in to provide a bearing.

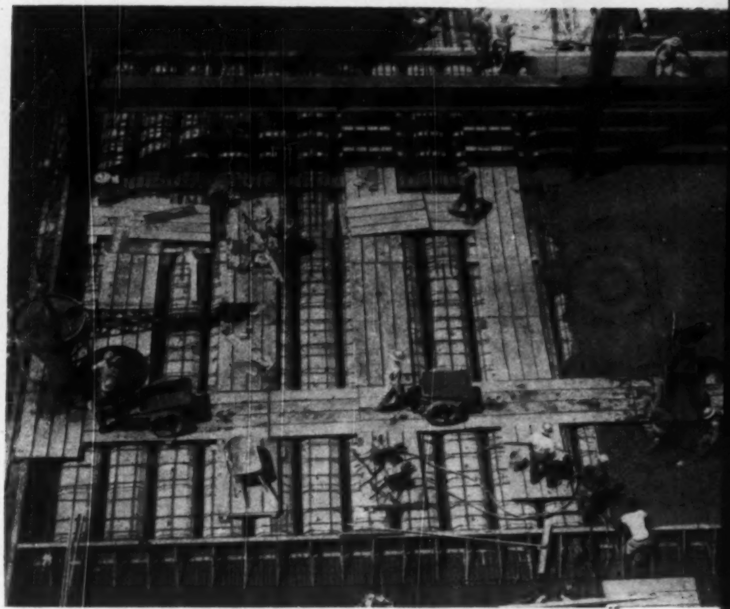
After placing the top reinforcing ($\frac{3}{4}$ in. bars on 9 in. centers plus the crisscrossed temperature steel) the slab was ready for concreting. This progressed at right angles to the run of the tubes. It was also stipulated that no concrete should be placed in a joist until concrete from the preceding joist had flowed under the void tube and risen to a height of over 5 in.

During all this work only two tubes gave way, and these collapses were due to the accidental dropping of heavy objects. Repairs were made by stapling on a patch.

While the superstructure of this por-



**TIEDOWN BARS,** to hold tubes in place, are installed by workmen before placing the top reinforcing steel.



**CONCRETING THE HOLLOW SLABS** was a carefully controlled but speedy operation, with buggies fed from a large bucket.

tion of the building advanced rather smoothly, foundations for the steel columns along the sidewalks were sunk under considerable difficulty. The basic problem was caused by a pocket of bad ground found under one line of columns, which required a change from drilled caissons, as planned, to hand-dug Chicago caissons.

Caisson sinking, in turn, was made more difficult by the fact that the caissons had to go beneath the area occupied by the store's air conditioning. As a consequence the contractor had to drive a 12-ft dia tunnel beneath the air conditioning room, and from it sink the caissons, which were 8 ft in diameter and went down as far as 40 ft.

Removing the 2,000 cu yd of excavated material also had to be done the hard way. Using a 3 cu ft caisson bucket, the spoil was hoisted up the shaft with an air hoist and dumped into wheelbarrows. Then the wheelbarrows were taken to the tunnel portal where a second air hoist lifted them two stories to the basement level. Here they were wheeled into the store and and into a store elevator to be lifted to the street level where a truck waited at the curb.

Caissons, as they were sunk, were safeguarded with lagging of 2 x 6's and by ring beams set 5 ft 4 in. apart.

The main garage building across the street was practically a separate project in design and construction, and both of these involved some points of interest. The building has a central core housing a 34 ft wide circular exit ramp with the pay booth at the bottom, and stairs and self-service elevators for car owners.

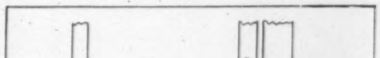
The main beams of the floor framing run in a 56 ft span from the exterior walls to this central core to support the sloping parking floors. These floors, on a 4% grade, are the only entrance "ramps" in the building. One revolution on them, around the building's central core, raises a car one story.

Construction was somewhat complicated because the ground floor is on a slight hill, about a 2½% grade, and is cut up with entrances and exits as well as five traffic lanes for the bank's drive-in depositors. But the principal construction problem was encountered in the foundations for the end of the garage that adjoins the wall of an existing building.

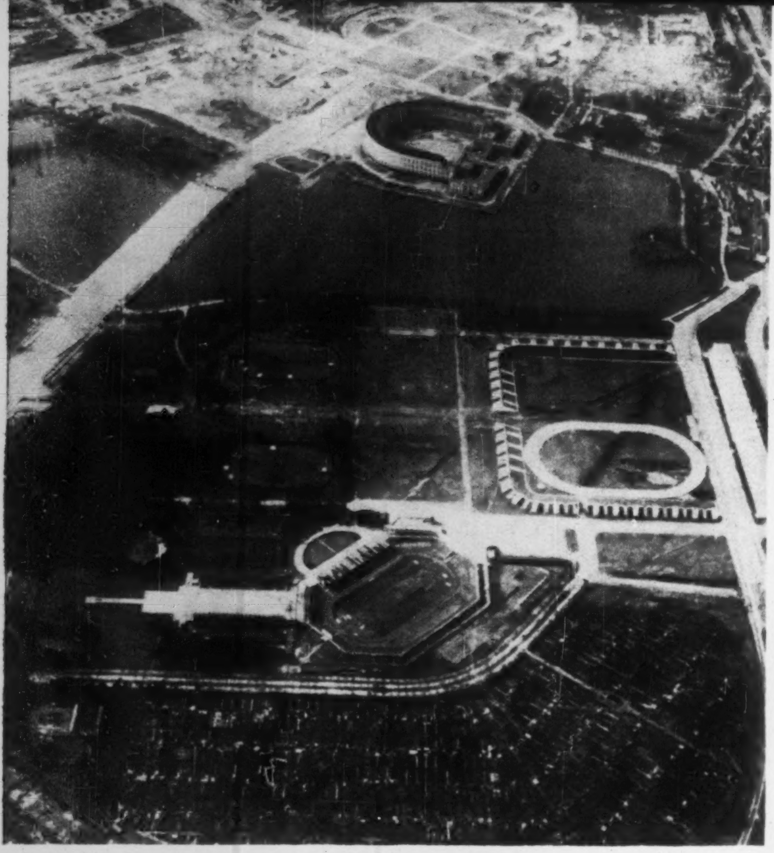
This wall rests on a stepped spread footing just below ground level while the foundations for the garage had to be carried much deeper. Since this was a party wall and could thus have been used for the garage, consideration was given to underpinning, but the hazards of this operation caused it to be avoided in favor of an offset column design employing concrete buttresses as shown in the sketch.

The 12 pier foundations required were first sunk alongside the old spread footing by boring 30 in. dia holes down 20 ft and belling them out to 80 in. Atop these piers were placed the buttresses—sometimes called cantilever columns—which in a height of two stories created a total offset of 4 ft. The garage's columns rest on top of the buttresses and follow the side of the old wall to the garage's full height. The two floor slabs bearing on these buttress columns are supported in such a way that no lateral thrust is created.

Architect for the garage building is the Leo A. Daly Co., of which Leo J. Daly, Jr., is president. Contractor is the Parsons Construction Co., for which Fred Hawkins is job sponsor, James Dworak, project manager and Marion Brightweiser, superintendent. Both firms are headquartered in Omaha.



**OFFSET COLUMNS** permitted foundation in main garage building to bypass wall footing of an adjacent building.



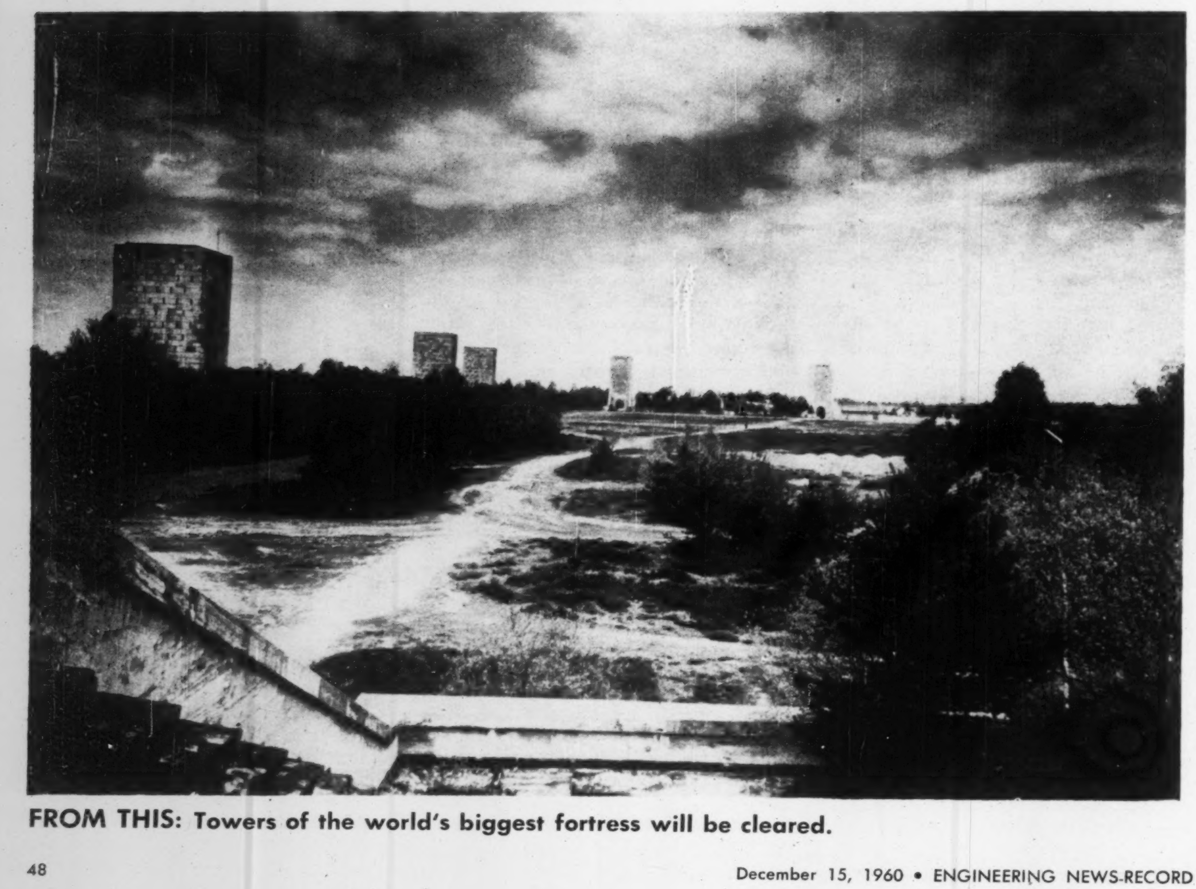
**STADIUMS** sit on site of future housing project.

# Hitler's

Nazi Germany's "greatest building project of all times"–a giant parade ground for the annual Party Congresses in Nuernberg–is being converted to a suburban housing development. Its 1,500 acres will house 40,000 people, making it the biggest housing project in postwar Germany.

The area finally will serve the purpose for which it was originally destined. In 1932 the state of Bavaria and the city of Nuernberg contracted to build homes on the site. But while housing plans were being prepared, Adolph Hitler overruled the contract and turned the site into a showcase for Nazi demonstrations. A number of arena buildings were started in the northern half of the site; the southern part served as camping ground for the thousands of Party Congress participants.

It is the southern part that is now becoming a modern exurban city, with shopping center, playgrounds, parks and a few medium-sized smoke-free manufacturing plants. The northern part will



**FROM THIS:** Towers of the world's biggest fortress will be cleared.

# Parade Grounds Become Suburbia

be made into a recreation area. Construction work is scheduled to take 10 to 15 years and will cost about $170 million.

A nonprofit housing society, Gemeinnuetzige Wohnungsgesellschaft der Stadt Nuernberg, is sponsoring the project. It will put up the $70 million to be spent initially on housing. All income from rents and house sales will be ploughed back into construction—a system that has enabled the society, capitalized at only $1.2 million, to build 11,000 apartments in Nuernberg since the war.

The remainder of the project, public buildings, plant and workshops will be paid for by the users—the town of Nuernberg, churches and industrial firms.

Of the 10,000 units planned, 50% will be in apartment houses, 25% in two-story houses, 15% in attached bungalows and 10% in one-family houses. The project also will include a shopping center, several elementary schools, one high school, two Protestant and Catholic churches, an administrative building, playgrounds and sports grounds.

The first neighborhood area of 800 apartments and 150 houses is now nearly completed. Bids are being taken for four additional neighborhoods.

One big headache for the builders is the "March Field," the only remaining building from Hitler's times located in the southern part of the area. March Field was planned as the world's biggest fortress. It was to be surrounded by rectangular 24x52-ft towers, 112 ft high and connected with each other by walls. Eleven such towers were fully completed and 15 are half finished.

The problem is what to do with them. They do not fit into the planned housing area; they are not suitable as air raid shelters. They will probably be wrecked, although transport of 4.2 million cu ft of rubbish will cost about $700,000.

The other buildings are all in the northern section and are more readily convertible into recreation grounds.

- The Congress Hall with its 40,000 seats is a U-shaped structure that resembles the Colosseum in Rome. It was three-quarters completed and had swallowed about $20 million when construction stopped at the outbreak of World War II. It will be converted into an open sports arena with 90,000 seats. Conversion will cost $6 million; the same amount would have been required to demolish the structure.
- The Zeppelin Arena, an almost square parade field, has a raised platform from which Hitler and 100,000 spectators took the salute of the marching formations. This is the only completed building of the whole project. The field currently is used by American troops for baseball games and will be available in the future for German sports clubs.
- A third stadium was to have become the "world's biggest," with room for 400,000 visitors. But it never got

**TO THIS: A suburban development of 40,000 persons on 1,500 acres.**

beyond the excavation stage. Diesel pumps had kept the 65-ft deep excavation free of water during the war. When the pumps stopped in 1945, the project literally drowned and today's Silver Lake came into being.

A 330-ft-wide parade road leading through the old structures is built of granite slabs. The U. S. Air Force uses it as a runway for courier planes. In the future it will serve as a parking area.

Planning and layout of the "Langwasser Housing Project" is based on the design of architect Franz Reicjel of Nuernberg, winner of a design competition.

## 9,710-Ft Tunnel to Pierce Spain's Guadarrama Range

A private construction company will begin work this fall on a $4.2-million, 9,710-ft tunnel through Spain's Guadarrama Mountain range.

The builders, Canales y Tuneles S. A. of Madrid will operate the tunnel on a toll basis for 75 years. At the end of this period, ownership will go to the government.

The Guadarrama range rises from the plateau of central Spain about 35 miles north of Madrid. Winter blizzards frequently close the passes, cutting off traffic between northern and southern Spain part of each year.

The Guadarrama Tunnel will be on the main road to Valladolid and go beneath the 4,953-ft Alto de Los Leones Pass, the scene of some of the heaviest fighting in the Spanish Civil War. The tunnel will start at an altitude of 4,260 ft. It will have a 26-ft roadway and a minimum height of 16 ft 4 in. Completion is scheduled for late 1962. The designer is Fernando Gallego de Chaves.

## Iraq Advertises for Bids On Long-Planned Airport

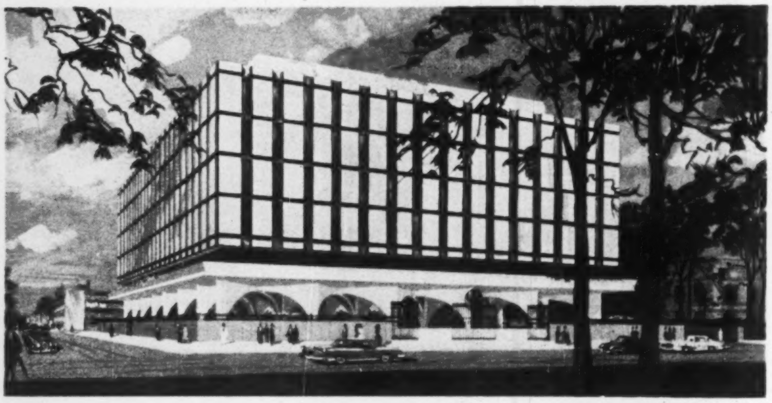
Baghdad's long-planned, $32.2-million international airport got a formal start as the government of Iraq advertised for bids on construction work.

The work will include a 147-ft-wide runway, 9,840 ft long and designed for extension to 13,120 ft; a main taxiway; exit taxiways and aprons; secondary access roads; lighting; water mains, and sewage system with a treatment plant.

The Directorate General of Roads and Bridges in the Ministry of Communications will accept bids until January 15.

The new airport will be located at Qasr el Meleh (Salt Palace), 11 miles west of central Baghdad. The existing airport at Baghdad West has been engulfed by the expanding city limits and condemned as incapable of handling current traffic.

Consultants for the project are Sir Alexander Gibb & Partners, London, who have been in charge of design since its beginning in 1947.



# U.S. Builds Embassy in Mexico

The new U.S. Embassy now under construction in Mexico City will have reinforced concrete walls covered with marble and aluminum. Windows will be gray glass.

The $4.9-million building will be 221 x 150 ft and will have an interior patio of 90 ft square. The structure will have six floors and two penthouses, making it one of the largest U.S. Embassies. Embassy offices in Mexico City, have formerly been located in leased space.

Mexican architects, Carlos Contreras and Leonardo Zeevaert collaborated with the firm of Southwestern Architects and Engineers, Austin, Tex. on design. A Mexican contractor, Constructora Marhnos, is building the structure.

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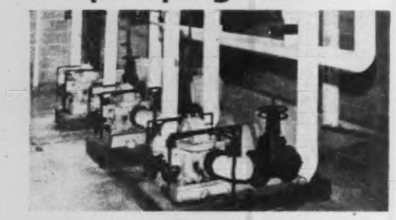
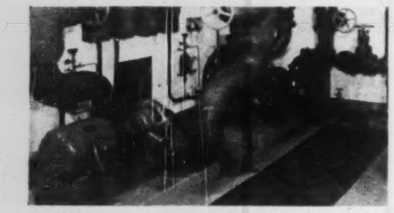


**In Luzerne County, Penn.**
. . . the new, state-operated institution for defective delinquents depends on three Weinman Type JC Multi-stage, Split Case Pumps to circulate water to its 30-building complex scattered over 1250 acres. Operating from a central plant, the Weinman Pumps deliver a 'round-the-clock supply of water for heating and domestic use to each building.



**In Kansas City, Missouri**
. . . seven Weinman Pumps perform an unusual variety of pumping chores in Old American Insurance Company's sparkling new headquarters building. Two pumps circulate hot water for heating; one functions as a condenser pump, another delivers chilled water into the air conditioning system; two sewage ejectors handle sewage problems, and still another pump delivers 1000 GPM to a decorative pool and waterfall.

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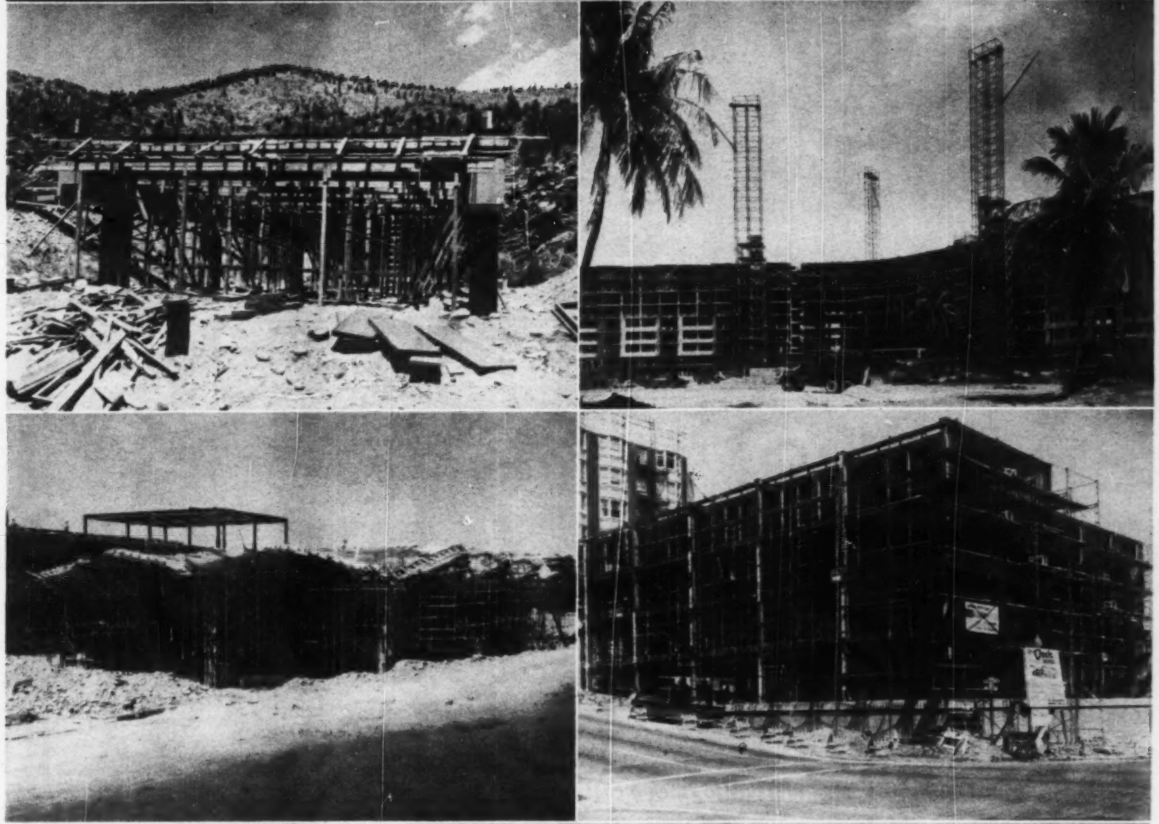

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PROJECTS SHOWN ABOVE

**Top, L to R**
**A. S. Horner Const. Co., Denver Colo. uses ADVANCE 10-M Heavy-Duty Shoring Scaffold for construction of Colorado Springs Freeway bridges.**
**BEAVER Heavy-Duty Hoisting Towers with Crete-Quip automatic concrete equipment . . . Morton Tower Apts., Miami Beach, Fla.—Robt. L. Turchin, Gen. Contr.**

**Bottom, L to R**
**Conventional ADVANCE Shoring Scaffold is used by H. W. Geshwind Co. for construction of hyperbolic parabaloid roof at new Philco Research Center facilities, Blue Bell, Pa.**
**ADVANCE masonry scaffold speeds construction of Oasis Motel, San Francisco, Cal; Bel View Bldrs., San Jose, Cal., Gen. Contr.**

• ——— •

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# it's the great

**November 30th marked the end of test traffic in the $27,000,000 pavement test sponsored by the American Association of State Highway Officials (AASHO).** More than 1,100,000 load applications and hundreds of millions of scientific readings were recorded before the last truck rolled off the track at Ottawa, Illinois. The fleet of trucks—from farm-size pickups to 54-ton semi-trailers—piled up an impressive 17 million miles of travel. On the test loops, 836 separate sections repeat nearly 200 different pavement combinations to provide a wide range of measurements.

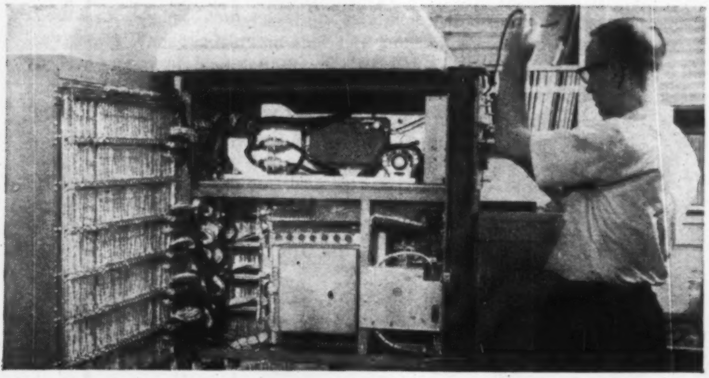
Every effort has been made to carry out the road test by the most scientific methods ever used. Automatic electronic instrumentation and recording equipment was designed to assure unbiased findings of highest reliability. Giant computers are analyzing and evaluating the mountains of statistics accumulated.

Administered by the Highway Research Board of the National Academy of Sciences—National Research Council, the National Road Test will answer the big questions in today's highway construction. The significant findings will influence highway design and construction across the nation.

Engineers, officials and legislators will have invaluable help in designing pavements for the Interstate System—and roads and streets of all classes.

**PORTLAND CEMENT ASSOCIATION** *A national organization to improve and extend the uses of concrete*

# world" in two years... National Road Test!



Scientific readings by the millions have been analyzed by AASHO computers. "Statistically unassailable" facts on pavement design will result.

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**Financed by** the States and the District of Columbia, the territory of Puerto Rico, the Bureau of Public Roads, the Automobile Manufacturers Association, the American Petroleum Institute, with cooperation and assistance of the Department of Defense.

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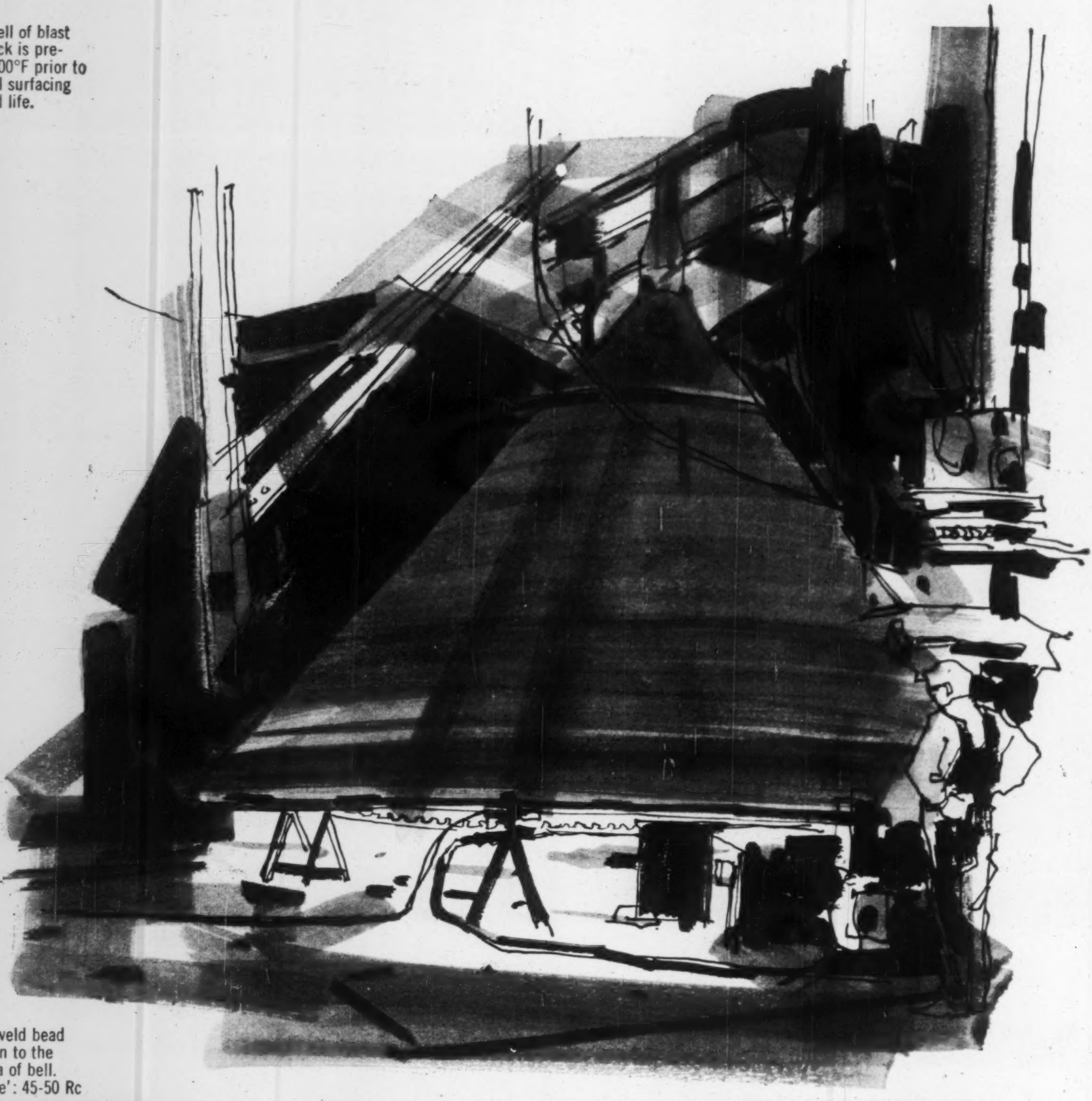
■ Giant bell of blast furnace stack is preheated to 400°F prior to Mahon hard surfacing for renewed life.



■ A hard-weld bead is spiraled on to the working area of bell. 'New Surface': 45-50 Rc

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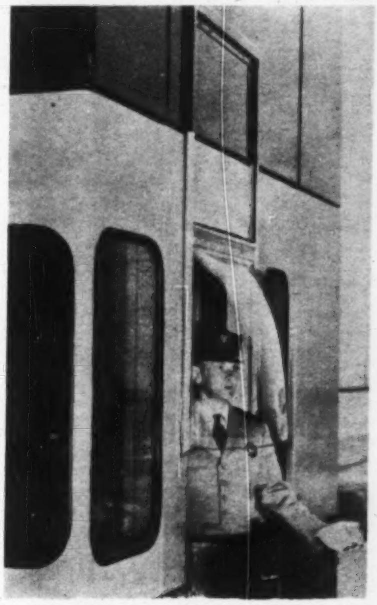
# Plastic Shield for Toll Collectors

By equipping toll booths with a shaped Plexiglas shield to protect collector-operators during inclement weather, the Garden State Parkway Authority is said to have cut in half the number of heaters required in 28 toll booths and measurably reduced operator colds, dry skin and other ailments caused by standing in drafts. In addition, the shield keeps the toll equipment dry and thereby facilitates paper work in the booth.

The collector-protector (shield plus framework) shown measures 32 in. x 36 in. overall and is installed on the Raritan River Interchange Parkway booth near South Amboy. Plexiglas was chosen as the shield material because of its transparency, ease of forming, outdoor durability and resistance to breakage.

The spring-loaded, 5-lb shield, which rides in a 16-gage aluminum sheet metal framework approximately twice its length, locks in the upper, or out of the way, position above the toll booth door when the shield's lower spring seats against a dog leg in the framework. To lower the shield the operator simply pushes it out away from the framework and then pulls down. When lowered, heated air that has risen to the top of the toll booth can escape only by going down under the shield and out the gap between the bottom of the shield and the top of the Dutch door. Thus the shield cuts down on the amount of air flowing out of the booth. Rohm & Haas Co., Washington Square, Philadelphia 5, Pa.



**Toll collector shield is shown in lowered position.**

# Low Cost Shelters Available

Home fallout shelters that meet the protection standards of the Office of Civil and Defense Mobilization are now available for as little as $295.

Wonder Building Living Shelters are barrel arches made of 2-ft-wide sheets of zinc-coated steel, joined with nuts and bolts. The family units, in basement and earth-covered models, accommodate four to six persons. Larger units for industrial, farm and school use also are available.

The basement shelter is 8 x 8 ft by 6 ft high inside. A 5-ft-high bulkhead is built around the steel arch and the intervening space is filled with sand.

An earth-covered shelter, which is installed in front or back yards by the manufacturer and costs from $1,095 up, also is available. It is 8 x 10 ft by 7½ ft high, and has a 4 x 10-ft entrance and storage area.

The unit is placed in a pit, covered with a waterproofing material and wrapped with a polyethylene sheet. It is then covered with gravel. Ventilation is provided through covered intake and exhaust vents and by a hand-operated turbine pump. Wonder Building Corp. of America, 30 N. La Salle, Chicago, Ill.

## Compression Machine Has Variable Rate of Loading

A power-operated portable compression machine with a variable speed of loading has been announced by Forney.

The FT-30 jobsite tester incorporates a transverse that permits fast preloading of the specimen. The speed at which a specimen is loaded can be preset according to the applicable ASTM or AASHO specification. If desired it can be varied while the test is in progress.

It is claimed that the speed of loading is maintained exactly without variation due to pressure increase. With the FT-30, it is possible to fully conform to ASTM and AASHO specifications for rate of loading. Forney's Inc., P. O. Box 310, New Castle, Pa.

**Ertel self-leveling level saves up to 50% surveying time**

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The Ertel Automatic Level is suited for Second Order leveling although First Order results have been obtained under test. Many have been sold on a comparison performance basis. Write for Bulletin INA which gives complete data.

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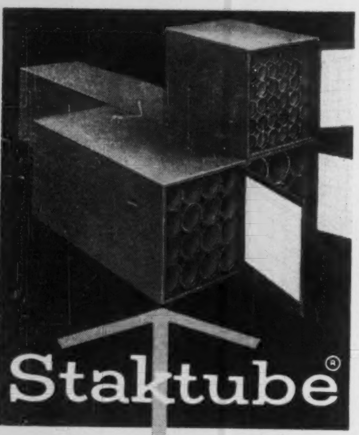

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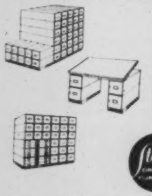

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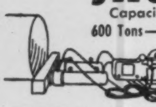

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# New Products Briefs

• **Ultrasonic tests for pipe welds**—Four heads beam waves that record defects lying in any plane. Paint is automatically sprayed on the defective area to facilitate visual inspection. An audible signal is also triggered, and a complete graphic record of the test is printed by an automatic recorder. Defects uncovered and identified include pores, cracks, notches, slag streaks and bond failures. The system is adaptable to trailer-mounted mobile Driam pipe machines. THE DRIAM CORP., MANITOWOC, WIS.

• **Truck mixer**—A Rex horizontal truck mixer mounted on an off-highway diesel carrier is reportedly the largest such unit ever built. It permits loads in excess of 15 cu yd. When filled to capacity, the total weight of the carrier-mixer, including 500 gal of mixing water, is over 50 tons. Without a payload it weighs over 21 tons. The carrier's 205-in. wheelbase is equipped with special 24-in. metallic-core tires. CHAIN BELT CO., MILWAUKEE 1, WIS.

• **British roofing tile**—A light-weight concrete roofing tile that is said to have captured a major part of the market in Great Britain and Australia is now to be produced in the U. S. The tiles will come in four basic designs and 11 colors. They will sell at $22 per 100 sq ft wholesale. JAYWOTH PERMAROOF, INC., 1079 B ST., HAYWARD, CALIF.

• **Check valves**—Line of check valves is designed to offer positive seating and leakproof body. Available in brass, steel and stainless steel with ⅛-in. through 1-in. dry seal threads or AND-10050 ports with straight threads. Maker says they will handle pressures up to 5,000 psi. MANATROL CORP., 2372 7TH ST., CLEVELAND 13, OHIO.

• **Pipe cutter**—Hydraulic pipe cutter is designed for use on 10 in. to 20 in. cast iron water main. Two men can install the unit on the pipe, and one man can then do the cutting. WHEELER MFG. CO., ASHTABULA, OHIO.

• **Grout pump**—The "Grout King" will pump mortar 10 stories high or 300 ft horizontally. It will deliver 20 cu yd per hour, according to the manufacturer. A 30-hp air-cooled engine, equipped with self-starter, powers the pump. It has a three-speed transmission and one reverse gear to facilitate clean-out work. Trailer-mounted, the "Grout King" is easily towed from job to job. CHALLENGE-COOK BROS., INC., 3334 SAN FENANDO RD., LOS ANGELES 65, CALIF.

• **Water filter**—A water filter for use in household and small commercial applications is said to remove all precipitated iron oxide particles, sand, silt or any sediment visible to the eye. The filter measures 14 in. high and is 4¾ in. in diameter. It will handle flows up to 10 gpm, pressures up to 130 psi and temperatures to 100° F. CALGON CO., HAGAN CENTER, PITTSBURGH 13, PA.

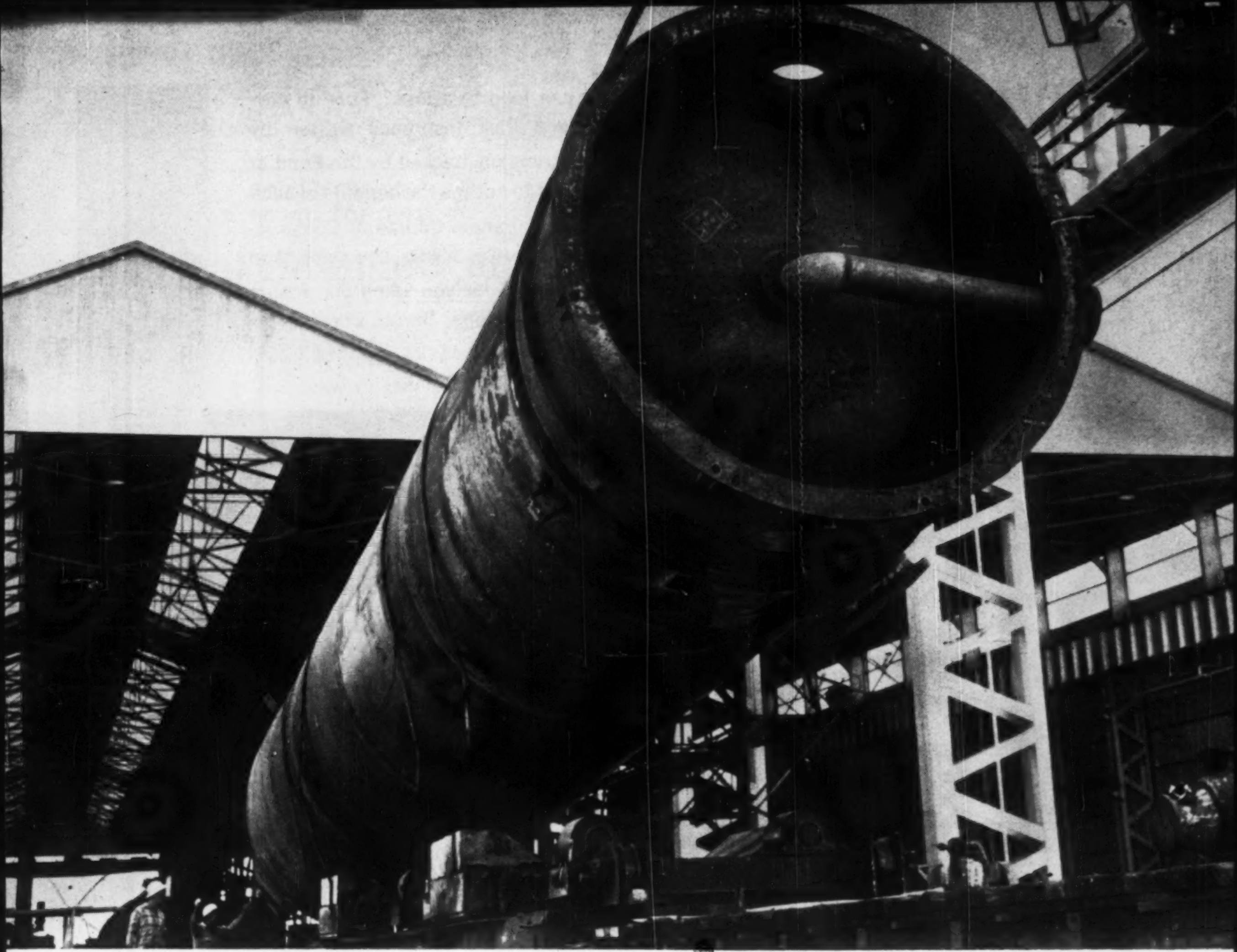
• **Algae killer**—A line of liquid organic chemical products is designed for use in treating industrial cooling water. The chemicals, called Dearcides, are said to be effective against bacteria and algae, and low in toxicity to humans. The maker says the chemicals are soluble in all types of water. DEARBORN CHEMICAL CO., MERCHANDISE MART PLAZA, CHICAGO 54, ILL.

• **Sewer cleaner**—The Marco Powerfeed Model 70 is designed to clean sewer lines 3 to 6 in. in dia and up to 165 ft long. The unit includes on-off drive; two cartridges, each with ¾-in. x 55-ft springs; a set of heads; a ½-hp 115/230 volt capacitor motor with reverse and operating switch. MARCO PRODUCTS CO., 3416 VINEYARD AVE., LOS ANGELES 16, CALIF.

• **Vibrating plate**—The VPG 3000 Vibro Plate has a forward speed of 40 ft per min delivering four thousand 2,700-lb blows per min. It is powered by a four-cycle gasoline engine. The plate has 720 sq in. of compaction surface. It can be used for bank run or crushed material, and for compacting large asphalt patch areas. WACKER CORP., HARTFORD, WIS.

• **Light screed**—A lightweight screed simultaneously packs and settles concrete around steel reinforcing rods and shapes the crown and slope of the roadway. The screeds are built to meet the customer's length and thickness specifications. They are designed primarily for bridge and overpass road construction. YAUN MFG. CO., 2120 NO. 3RD AVE., BATON ROUGE, LA.

• **Films aid sales**—A new company, Systems Technology Films, Inc., will produce technical films for industry that help the sales engineer to sell his product. The films will demonstrate the relationship of a product to an entire production operation. "Salesmen should show how their equipment integrates into an entire operation and not just attempt to sell an individual machine," says a company representative. SYSTEMS TECHNOLOGY FILMS, INC., 10 E. 49 ST., NEW YORK 17, N. Y.



Designed by the Fluor Corporation, Ltd., for the Union Texas Natural Gas Corp.

## It took a stork's big brother to deliver this 225-ton baby

High-capacity cranes were needed to handle this giant absorber unit (225 tons, 56′ long, 4″ shell), that required special attention and equipment all along the way. First, it was made of ASTM A212 Grade B Firebox Quality Plate, charpy impact-tested by American Bridge to 15 ft. lbs. @ −50°F. Then it was flame cut and roll formed. Its main stem was 100% radiographed, and its nozzle penetration was magnetic-particle inspected. The entire vessel was then stress relieved at 1150°F. for four hours. And finally, it was placed on special flat cars for delivery. ☐ This kind of job demands the complete, modern, high-capacity facilities that permit our Orange, Texas plate shop to handle all kinds of custom plate work. High-capacity cranes, mammoth car bottom furnaces, giant presses and bending rolls, the latest in welding equipment, and complete inspection facilities. This plus know-how and strategic location permit us to produce all kinds of plate work efficiently and economically. And anything we make, we can erect. Write for our booklet on plate fabricating facilities and services.

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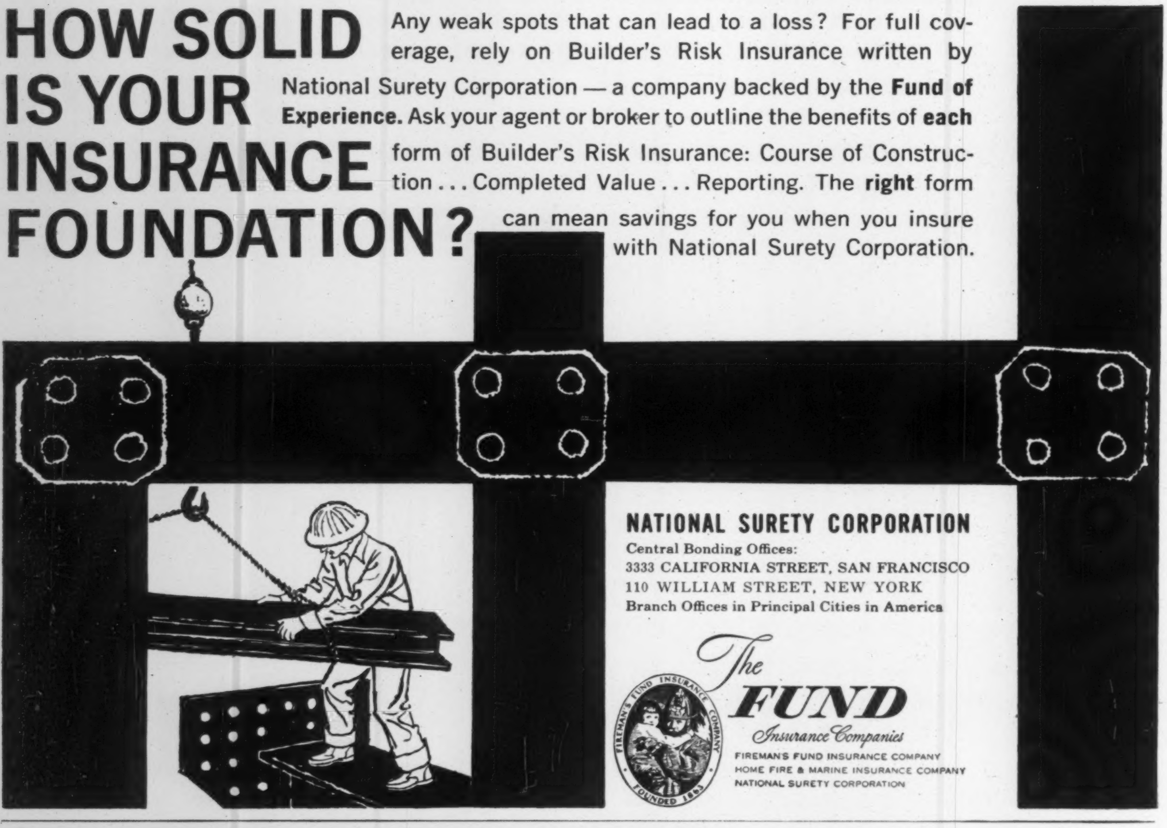

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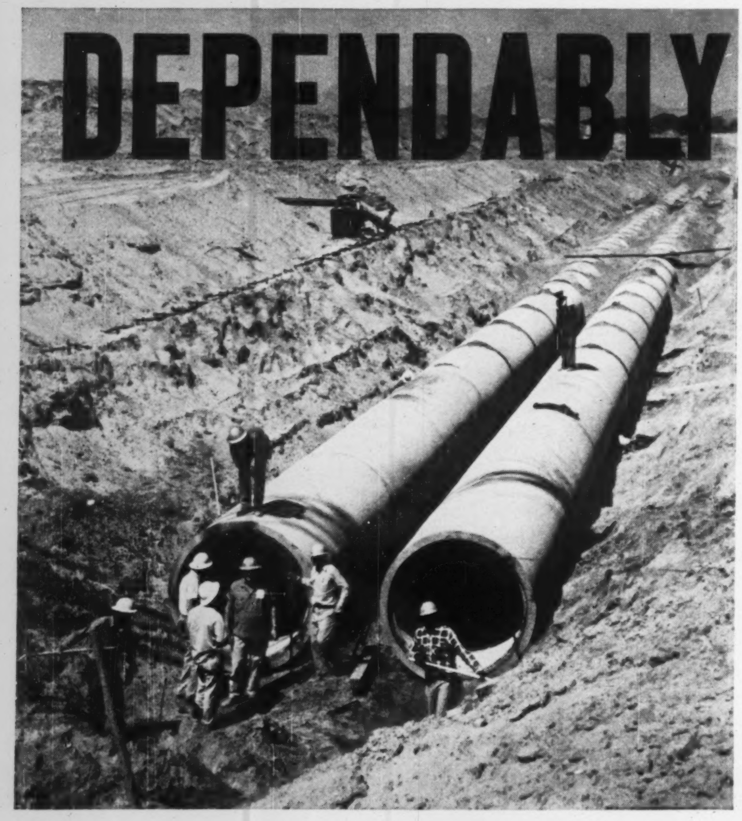
# DEPENDABLY DRY



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**Force main accounts for most of . . .**

# Hospital Sewage Pumping Costs

Hollywood (Fla.) Memorial Hospital will provide sewage facilities for present and future hospital additions with this $89,489 award for a gravity sanitary sewer, cast iron force main, and pumping station.

The job is divided into two parts, the sanitary sewer and force main contract going to Intercounty Construction Corp., Ft. Lauderdale, for $63,171, 6% under Inter American Pipe Line Corp., Miami, second low. Cast iron pipe costs for the force main equal 51% of Intercounty's bid.

Hugh Palmer, Hollywood, low of twelve, will build the pumping station for $26,318, 4% under the second low, Rood Construction Co., Miami. Philpott, Ross & Saarinen Inc., are the engineers for the project.

The gravity sanitary sewer will be 1,900 ft long and will require a 4-ft to 10-ft cut. The force main will be 12,300 ft long.

The sewage pumping station will be placed 16 ft below ground level and includes wet and dry pit with pump floor, two 250 GPM electrical pumps, comminutor, gasoline engine and angle drive with one pump, ventilation equipment and electrical controls.

The route of the force main crosses two railroads, the Central & South Florida Flood Control canal, and the proposed Interstate Highway right-of-way where de-mucking will be required.

Cast iron pipe to be used for the force main is defined as: 6 in., class 21, 0.35 in. minimum thickness, 21 in.-45 in. metal AWWA C106-53 with cement mortar lining and tar coated, mechanical joints or rubber composition gaskets.

Prevailing wage rates set by the Florida Industrial Commission for heavy construction in this area include: crane & dragline operators, $2.32/hr; oilers, $1.57; pipe layers, $1.60; bulldozer operators, $1.86; truck drivers, $1.35; roller operators, $1.60; mechanic, $2.00; carpenters, $2.01; laborers, $1.28; tractor operators, $1.25; concrete finishers, $3.60; and pile driver operators, $2.00/hr.

The bidding included:

### Sanitary Sewers & Force Main

| | | |
|---|---|---|
| 1C | Intercounty Const. Corp., Ft. Lauderdale, Fla | $63,171 |
| 2 | Inter American Pipe Line Corp., Miami, Fla | 67,170 |
| 14 | Joe Reinertson Inc., Miami, Fla | 141,596 |
| EE | Philpott, Ross & Saarinen, Inc., Ft. Lauderdale, Fla | 80,000 |

| Bids: 8-31-60<br>Items | Unit | Quantity | Unit Prices<br>1C | 2 |
|---|---|---|---|---|
| VCP sew 8", 0-6' cut | ft | 870 | $3.20 | $3.00 |
| 6'-8' cut | ft | 865 | 3.40 | 5.00 |
| 8'-10' cut | ft | 50 | 6.00 | 9.00 |
| 10", 8'-10' cut | ft | 125 | 7.00 | 9.00 |
| CIP sew 10", 8'-10' cut | ft | 20 | 8.50 | 10.00 |
| Bedding, special for VCP sew 8' and 10' | ft | 50 | 0.60 | 4.00 |
| Laterals, type A | ea | 9 | 9.00 | 40.00 |
| type B | ea | 2 | 50.00 | 75.00 |
| MH, stnd & drop & appurt | | | | |
| 0-6' cut | ea | 6 | 260.00 | 240.00 |
| 6'-8' cut | ea | 4 | 320.00 | 300.00 |
| 8'-10' cut | ea | 2 | 375.00 | 400.00 |
| CI force main 6" | ft | 11,800 | 2.75 | 2.50 |
| Asb-cmt force main 6", alt | ft | 11,800 | 2.75 | 2.50 |
| Vlv box & lid CI, vlv plug 6" | ea | 3 | 180.00 | 100.00 |
| Crossing, over Hollywood canal | ls | job | 4,130 | 2,000 |
| of S.A.L. RR & St Rd 9 | ls | job | 10,650 | 14,300 |
| Pile casing support 12", for S.A.L. RR & St Rd 9 Xing | ea | 2 | 400.00 | 800.00 |
| Crossing, F.E.C. RR, incl CIP | ls | job | 3,000 | 4,000 |
| Conc, encasement cl I | ft | 100 | 3.00 | 2.00 |
| cl II | ea | 5 | 6.00 | 2.00 |
| cl C, extra | cy | 50 | 15.00 | 60.00 |
| Exc, extra | cy | 50 | 1.00 | 4.00 |

### Sewage Pumping Station

| | | |
|---|---|---|
| 1C | Hugh F. Palmer, Hollywood, Fla | $26,318 |
| 2 | Rood Const. Co., Miami, Fla | 27,507 |
| 12 | Widell Associates, Inc., Hollywood, Fla | 41,427 |
| EE | Philpott, Ross & Saarinen, Inc., Ft. Lauderdale, Fla | 46,000 |

| Bids: 8-31-60<br>Items | Unit | Quantity | Unit Prices<br>1C | 2 |
|---|---|---|---|---|
| Sew pumping station, compl | ls | job | $24,708 | $26,000 |
| Exc, extra | cy | 100 | 3.00 | 8.64 |
| Steel, reinforcing extra | lb | 500 | 0.12 | 0.125 |
| Conc, cl B extra | cy | 10 | 125.00 | 58.10 |

# Bidding Tight for Kimball Substation

A $59,588 Kimball, Neb., substation contract to provide electricity for Rural Electrification Administration lines in the vicinity of Kimball, drew close low and second low bids. Although C. S. P. Engineering, Casper, Wyo., took the award, Lindstrom Construction Co., Grand Forks, N. D., was only $880 out of first place.

Kimball substation is being built for the Bureau of Reclamation as part of the Missouri River Basin Project. It will be placed seven miles southeast of Kimball.

The substation will be approximately 260 ft by 160 ft. Construction includes 2,000 yd of excavation and 1,400 yd of embankment.

Kimball is located in Kimball county in the extreme corner of the state, bounded by Wyo. on the west and Colo. on the south. The town is on Lodgepole Creek, a tributary of the South Platte River.

Materials will be transported by rail and highway to the site of the substation about seven miles from the nearest railhead.

Minimum wage rates for the project include: skilled labor, $3.75/hr; semi-skilled, $2.85; and common labor, $1.90. All rates are plus 13% fringe benefits.

The bidding included:

| | | |
|---|---|---|
| 1C | C. S. P. Engineering Co., Casper, Wyo | $59,588 |
| 2 | Lindstrom Const. Co., Grand Forks, N. D | 60,468 |
| 7 | Crawford Electric Co., North Platte, Neb | 96,574 |
| EE | United States Bureau of Reclamation | 63,829 |

| Bids: 8-9-60<br>Items | Unit | Quantity | Unit Prices<br>1C | 2 |
|---|---|---|---|---|
| * installation only, furnished by government | | | | |
| Exc, for stripping | cy | 500 | $0.25 | $0.50 |
| for yard | cy | 2,000 | 0.50 | 0.50 |
| for structures | cy | 500 | 3.00 | 2.00 |
| Backfill | cy | 250 | 2.00 | 1.50 |
| compacting | cy | 250 | 2.00 | 2.50 |
| sand, & tmbr prot for buried ins cable | lf | 110 | 1.00 | 1.00 |
| Embankment, compacting | cy | 1,400 | 0.10 | 0.10 |
| Gravel, for fills | cy | 250 | 5.00 | 3.50 |
| surfacing 4" | sy | 3,300 | 1.00 | 0.42 |
| Riprap | cy | 3 | 10.00 | 60.00 |
| Sterilant, soil | sy | 3,100 | 0.10 | 0.15 |
| CMP drains, #16 8"φ | lf | 30 | 5.00 | 5.00 |
| Concrete | cy | 80 | 65.00 | 65.00 |
| Reinforcement bars & fabric | lb | 6,200 | 0.25 | 0.25 |
| Bldg, service const | ls | job | 5,000 | 5,000 |
| Steel, structures | lb | 64,000 | 0.25 | 0.25 |
| Fence, chain-link | lf | 680 | 4.00 | 4.50 |
| Platforms, operating, double switch | ea | 3 | 250.00 | 285.00 |
| Aluminum, cable trench cov. | lb | 500 | 1.00 | 1.00 |
| Signs, equip ident | ea | 19 | 5.00 | 8.00 |
| phase ident | ea | 36 | 2.00 | 4.00 |
| warning & safety | ea | 4 | 7.50 | 10.00 |
| Filtering insulating oil | gal | 6,000 | 0.02 | 0.03 |
| Cable, copper bare strd, for grounding sys #4 AWG | lf | 50 | 0.50 | 0.25 |
| #4/0 AWG | lf | 1,900 | 1.00 | 1.00 |
| Cond, elec rigid met 4" | lf | 5 | 5.00 | 10.00 |
| 2" | lf | 75 | 2.00 | 2.00 |
| 1" | lf | 2,700 | 1.00 | 1.00 |
| Trans, pwr, with lightning arrestors, 10,000-kva* | ea | 1 | 1,000 | 2,500 |
| Ckt bkr, 34.5-kv* | ea | 3 | 250.00 | 350.00 |
| Trans, cur, 34.5-kv* | ea | 9 | 50.00 | 50.00 |
| Trans, potential 34.5-kv* | ea | 3 | 50.00 | 50.00 |
| Trans, distr single-phase, 37.5-kva* | ea | 1 | 25.00 | 50.00 |
| Sw, 3-pole air, 115-kv | | | | |
| w/gnd bl* | ea | 2 | 350.00 | 250.00 |
| w/automatic gnd bl* | ea | 1 | 400.00 | 300.00 |
| air, 34.5-kv hook-oper* | ea | 18 | 25.00 | 25.00 |
| w/gnd bl* | ea | 9 | 25.00 | 35.00 |
| fused disconnect 15-kv* | ea | 2 | 20.00 | 15.00 |
| Capacitor, coupling w/lead-in wire 115-kv* | ea | 1 | 50.00 | 35.00 |
| Tunning unit, line, single freq | ea | 1 | 25.00 | 35.00 |
| Alum pipe rigid buses, ips 1" | lf | 460 | 4.50 | 2.75 |
| 2" | lf | 345 | 6.50 | 4.10 |
| Pedestal insulator, 15-kv | ea | 3 | 15.00 | 25.00 |
| 34.5-kv | ea | 51 | 20.00 | 40.00 |
| 115-kv | ea | 6 | 150.00 | 175.00 |
| Terminals, sw | ea | 36 | 10.00 | 15.00 |
| Strain buses, bare copper cable #4/0 AWG | lf | 150 | 0.50 | 0.75 |
| bare ACSR cable #4/0 AWG | lf | 300 | 2.00 | 2.10 |
| Single-cond 600-v ins cable | | | | |
| #1/0 AWG | lf | 15 | 1.00 | 1.00 |
| #2 AWG | lf | 275 | 0.50 | 0.40 |
| #8 AWG | lf | 455 | 0.15 | 0.15 |
| #10 AWG | lf | 2,675 | 0.10 | 0.10 |
| #12 AWG | lf | 370 | 0.05 | 0.10 |
| 2-cond 600-v ins cable #10 AWG | lf | 280 | 0.25 | 0.25 |
| 4-cond 600-v ins cable #10 AWG | lf | 965 | 0.40 | 0.40 |
| 12-cond 600-v ins cable #10 AWG | lf | 220 | 1.00 | 1.25 |
| Strain buses, 477,000-circular mil 24/7 bare ASCR cable | lf | 400 | 3.50 | 4.55 |
| Cable, coaxial | lf | 250 | 0.25 | 0.20 |
| Pedestal insulator, 5-kv | ea | 1 | 10.00 | 25.00 |
| Wire, stranded steel, overhead gnd 3/8" | lf | 160 | 0.30 | 1.50 |
| Term boxes, ct tp D | ea | 3 | 25.00 | 25.00 |
| pt tp A | ea | 1 | 30.00 | 35.00 |
| Lights, outdoor bracket | ea | 10 | 75.00 | 75.00 |
| Receptacles, 15-amp, 125-v alternating current plug | ea | 3 | 10.00 | 15.00 |
| Transmitter-receiver, carrier current set* | ea | 1 | 50.00 | 75.00 |
| Control board* | ls | job | 250.00 | 250.00 |
| Distribution board, alternat current & dir current* | ls | job | 100.00 | 60.00 |
| Storage bat & rack, station* | ls | job | 150.00 | 300.00 |
| Charger, battery* | ls | job | 50.00 | 50.00 |
| Light & receptacle sys in service bldg | ls | job | 500.00 | 100.00 |

**Liquidated damages: $50.00 per day**
**Completion time: 390 calendar days.**

# Materials Prices Monthly Market Quotations by ENR Field Reporters

## IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

| | STRUCT SHAPES— | PLATE CARBON STEEL | REINF BARS* billet | RIVETS ½-in. structural | SHEET PILING Base | STEEL RAILS Per Net Ton Standard | STEEL RAILS Per Net Ton Light | TRACK SUPPLIES Angle Bars | TRACK SUPPLIES Std Spikes | TRACK SUPPLIES Tie Plates | TRACK SUPPLIES Track Bolts |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Birmingham Area | $5.50 | $5.30 | $5.675 | $12.25 | ...... | $110.50 | $130.00 | $6.975 | $9.75 | $6.60 | ...... |
| Chicago Area | 5.50 | 5.30 | 5.675 | 12.25 | $6.50 | 110.50 | 130.00 | 6.975 | 9.75 | 6.60 | ...... |
| Pittsburgh Area | 5.50 | 5.30 | 5.675 | 12.25 | 6.50 | 110.50 | 130.00 | 6.975 | 9.75 | 6.60 | $14.75 |
| Buffalo Area | 5.50 | 5.30 | 5.675 | 12.25 | 6.50 | 110.50 | 130.00 | 6.975 | 9.75 | 6.60 | 14.75 |
| Cleveland | ...... | ...... | 5.675 | 12.25 | 6.50 | ...... | ...... | ...... | ...... | ...... | 14.75 |
| Youngstown Area | ...... | ...... | 5.675 | ...... | ...... | ...... | ...... | ...... | 9.75 | ...... | ...... |
| Geneva | 5.50 | 5.30 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Los Angeles | 6.20 | ...... | 6.375 | ...... | 6.50 | ...... | ...... | ...... | 9.75 | 6.875 | ...... |
| Pueblo | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 6.975 | 9.75 | 6.60 | ...... |

• Fairless Works, $5.575.

## IRON AND STEEL PRODUCTS—F.O.B. WAREHOUSE, PER 100 LBS., BASE PRICE

| | STRUCTURAL SHAPES Per 100 lb. base price | REINFORCING BARS Per 100 lb., base price 5 tons to carload lot New billet | REINFORCING BARS Rail steel | EXPANDED METAL LATH• Per 100 sq. yd., carload lots Std. diamond mesh. 3.4 lb. | EXPANDED METAL LATH• Std. ribbed 3.4 lb. |
|---|---|---|---|---|---|
| Atlanta | 7.29-8.29ErV | $8.75 | $8.75 | $53.00S | $57.00S |
| Baltimore | 9.70 | 9.00T | | 44.50 | 49.00 |
| Birmingham | 9.00ty | 8.51-9.94tyV | 8.51-9.94ty | 61.00pK | 67.00pK |
| Boston | 8.21-9.31K-sV | 8.75t | 8.75t | 49.50K | 54.00K |
| Chicago | 6.96-8.23ysV | 6.90-7.00guV | 6.90-7.00guV | 52.00JU | 63.00‡U |
| JCincinnati | 7.52-8.79sctysV | 8.16t‡ | .... | 44.50Kg | 49.00mnKg |
| Cleveland | 7.35-8.62sysV | 6.75ct | | 44.18KL | 48.92KL |
| Dallas | 7.71-49—st | 9.00 | 9.00 | 44.00u | 48.50w |
| Denver | 8.12cK | 9.25c | .... | 52.00n | 57.00n |
| Detroit | 7.52-8.79R—sVy | 7.37Q | 11.85Q | 67.00O | 74.00O |
| Kansas City | 8.78sT | 8.27N | .... | 51.00 | 55.50 |
| Los Angeles....y | 8.44-9.59dktsV | 7.35frt | .... | 55.00S | 64.00S |
| Minneapolis | 7.78-8.17ysV | 9.26T | 9.26T | 44.00K | 49.00K |
| Montreal | 7.90-8.60iCF/8.20-8.90AiF | 7.00/7.50FGi | 7.00/7.50FGi | 65.70h | 70.20h |
| New Orleans | ... | 8.00gkt- | .... | 50.00K | 55.00K |
| New York | 8.02-8.84V-s | 8.60tr | 8.60y | 50.00n | 58.00no |
| Philadelphia | 7.10-8.40-sV | 8.43vy | 9.30y | 48.00‡U | 52.50‡U |
| Pittsburgh | 6.96-8.23ysV | 7.35y | .... | 58.50‡rw | 64.50‡rw |
| St. Louis | 7.19-8.45stxvV | 7.35‡txQ | 7.35‡txQ | 61.00wxK | 62.00wxK |
| San Francisco | 8.43-10.34-sV | 9.85jS | .... | 53.00S | 58.00S |
| Seattle | 8.30-10.49aDsV | 8.85D— | .... | 67.00‡nD | 73.50‡nD |
| Toronto | 9.20H | 7.50 | 7.50 | 49.50yqI | 44.85qI |

STRUCTURAL SHAPES, Extras +: Quantity extras per cwt; item: 10,000# and over, base, 5,000—9,999#, +10¢, 2,000—4,999#, +35¢, 1,000—1,999#, +85¢, 400—999#, +$1.75, 100—399#, +$1.75, under 100#, +$1.75. Order: 20,000# and over, base, 10,000—19,999, +10¢, 5,000—9,999, +20¢, 2,000—4,999, +50¢, 1,000—1,999, +$1; 400—999, +$2, under 400, +$5.

REINFORCING BARS, Extras, New York: EXTRAS, per cwt—♦Quantity (applies to LCL shipments only): under 1,000#, +$1.80; 1000-1999#, +$1.50; 2000-4999#, +$1.20; 5000-9999#, +90¢; 10,000-19,999#, +60¢; 20,000-29,999#, +30¢; 30,000-39,999#, +10¢; 40,000# & up, none. ♦Size†: #2 +$2.50; #3 +$1.40; #4 +$1.00; #5 +70¢; #6, #7, #8, #9, #10, #11 +50¢. ♦Bending: heavy, +90¢; light +$2.20 (except in New York City and surrounding metropolitan area where bending must be done on the job). ♦Engineering (details and placing from designs by others): over 500 tons, +45¢; 200-499 tons, +50¢ but not over $4500; 75-199 tons, +65¢ but not over $2000; 20-74 tons, +75¢ but not over $975; 5-19 tons, +85¢ but not over $300; under 5 tons, +$1.00 but not over $85. Min. charge $25. Design only: +60¢.

WELDED FABRIC REINFORCING, Per 100 sq ft., carload lots fob mill:

| | |
|---|---|
| 4 × 18 in. No. 5 & 10 wires—Joliet, Ill., Donora, Pa., Monessen, Pa. | $7.04 |
| 4 × 12 in., No. 8 & 12 wires—Joliet, Ill., Donora, Pa., Monessen, Pa. | $2.62 |
| 6 × 8 in., No. 6 & 6 wires—Joliet, Ill., Donora, Pa., Monessen, Pa. | $4.17 |

•‡ Delivered •• Aver. of Canadian & American •# add 4% sales tax •a 2000–4999# •b 10,000–19,999#, fob city •c 20 tons or over •d 10,000–29,999# •e Intermediate struct'l •f Incl delivery in free zone •g CL •h list price; dominion tax exempt; add provincial and municipal taxes •i add provincial and municipal sales taxes •l Intermediate and hard grade •k fob city •l delivered; contractor to do unloading •m copper alloy •n LCL •o asphalt coated •p 500 sq. yd. or more. •q 2.5 lb •r less 2% disc. for cash •s 10,000# item in 20,000# order •t less ½% disc. 10 days •u add 20¢ del. •v incl 15¢ del. •w truck lots. •x add 2% sales tax •y add 15¢ del. •z add 10¢ del. •A American made. •C Canadian made. •D ½% for cash. •E 30,000# or over. •F Federal tax exempt for bldgs. •G add 10¢ del. •H 8.85 without tariff charges. •I 3 lb $60.00. •J 4 lb $47.50. •K less 2% disc. 10 days •L F.o.b. Youngs-own plant •M 5,000–9,999# •N 2,000–19,999# •O 100 sy lots •Q 5 tons to CL •R: revised •S less 2% disc. 10th •T less ½% disc, 10th of mo. •U less 2% disc 10 days •V varies according to type and size •W Chicago, Cincinnati, Cleveland, Dallas, Detroit, New York, Philadelphia, St. Louis, and Pittsburgh.

## PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

| | C. I. PIPE PRICE INDEXa | ASBESTOS CEMENT PIPE T per lin. ft. 6" Press Cl. 150 | ASBESTOS CEMENT PIPE T 12" Sew Cl. 1500 | CLAY SEWER PIPE Per ft., delivered, car load ASTMC 13-55 8 in. | CLAY SEWER PIPE ASTMC 13-55 12 in. | CLAY SEWER PIPE ASTMC 200-55T 24 in. | CLAY SEWER PIPE ASTMC 200-55T 36 in. | CLAY DRAIN TILE† Per 1,000 ft., car load lots, f.o.b. ASTMC 4-55 6 in. | CLAY DRAIN TILE† 8 in. | CONCRETE SEWER PIPEb Per ft., delivered ASTMC 14-55 12 in. | CONCRETE SEWER PIPEb 24 in. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Atlanta | 130.6 | $1.52/1.69 | $2.36/2.48 | $0.55r | $1.04r | $4.50r | $12.60r | $209.00sr | $334.00r | $0.95mKr | $3.75mKr |
| Baltimore | 140.2 | 1.61/1.69 | 2.19/2.30 | .665 | 1.20 | 3.05 | 12.71 | 187.80 | 289.20 | 1.01 | 2.75 |
| Birmingham | 125.8 | 1.52/1.69 | 2.26/2.37 | .50r | .95r | 4.14rw | 13.50rw | 295.00rz | 430.00rz | 1.75rS | 2.75rS |
| Boston | 143.2 | 1.63/1.71 | 2.19/2.30 | .84qrtL | 1.55qrtL | 6.39qrtM | ..... | 244.00r | 348.60r | 1.56S | 3.60S |
| Chicago | 140.0 | 1.48/1.69 | 2.19/2.30 | .93rm | 1.78rm | 7.52rm | 21.16rm | 220.00Br | 330.00Br | 1.30 | 4.00 |
| Cincinnati | 135.6 | 1.63/1.71 | 2.19/2.30 | .56Rt | 1.11Rt | 4.50Rt | 13.22R | 177.50R | 274.60R | .85rAB | 3.25rAB |
| Cleveland | 141.8 | 1.63/1.71 | 2.19/2.30 | .66BCN | 1.27tBC | 8.47tBC | 23.45tBC | 179.40mBC | 276.60mBC | 1.35 | 2.40P |
| Dallas | 137.9 | 1.63/1.71 | 2.26/2.37 | .575‡B | 1.09‡B | 4.75b‡B | 10.53‡bB | ...... | ...... | 1.27BD | 2.95BD |
| Denver | 145.1 | 1.71/1.80 | 2.36/2.48 | .56nr | 1.00nr | 4.98r | ..... | 460.00nr | 640.00nr | 1.05m | 3.50m |
| Detroit | 142.1 | 1.63/1.71 | 2.19/2.30 | .97nk | 1.86nk | 7.48nk | 19.95nk | 212.00mk | 327.00mk | 1.40k | 5.23k |
| Kansas City | 138.6 | 1.49/1.71 | 2.26/2.37 | .62r | 1.125r | 6.324br | 16.86r | 315.00r | 625.00r | 1.70r | 4.25r |
| Los Angeles..# | 148.6 | 1.67/1.79 | 2.19/2.30 | .82bl | 1.78blS | 7.19lbS | 16.90blS | 410.00lS | 590.00lS | 1.24fE | 3.66fsE |
| Minneapolis | 145.0 | 1.53/1.75 | 2.26/2.37 | 1.00oB | 1.80oB | 7.75oB | ..... | ...... | ...... | 2.19DFH | 6.31DFH |
| Montreal | ..... | .......... | .......... | 1.13u | 2.00u | 7.00u | 13.50u | 288.00 | 545.00 | 1.17D | 3.11jpD |
| New Orleans | 132.4 | 1.61/1.69 | 2.26/2.37 | .566r | 1.078r | 5.65r | ..... | 240.50pr | 566.00 | 1.50ilR | 4.15i |
| New York | 138.6 | 1.63/1.71 | 2.19/2.30 | .94 | 1.76R | 12.89 | 35.61 | 240.81 | 369.84 | 1.50‡B | 3.60‡B |
| Philadelphia | 137.9 | 1.61/1.69 | 2.19/2.30 | .75‡ | 1.44‡ | 9.40‡r | 25.57‡r | 230.00‡ | 350.00‡ | 1.50‡h | 5.50‡h |
| Pittsburgh | 142.9 | 1.63/1.71 | 2.19/2.30 | .66K | 1.27K | 4.95K | 12.92K | 197.00 | 302.00 | 1.66Db | 3.93DB |
| St. Louis...O | 135.7 | 1.48/1.69 | 2.26/2.37 | .62r | 1.23r | 5.10r | 12.95rS | 200.00r | 350.00r | 1.75i | 4.05 |
| San Francisco | 148.6 | 1.67/1.79 | 2.19/2.30 | .86‡d | 1.86‡d | 7.53‡d | 18.00‡d | 360.00‡l | 620.00‡l | 1.05‡Q | 3.30‡Q |
| Seattle | 149.0 | 1.71/1.80 | 2.19/2.30 | .88bk | 1.86kb | 7.61k | ..... | 260.00ck | ...... | 1.90ky | 4.50ky |
| Toronto | ..... | .......... | .......... | .80F | 1.50F | 6.00F | ..... | 185.00F | 305.00F | 1.27F | 5.19F |

•WROUGHT STEEL PIPE (Full standard weight) Discount from list; see footnote

| Mill | 2½ & 3 in.,* Black % | 2½ & 3 in.,* Galv. % | 3½ to 6 in.,* Black % | 3½ to 6 in.,* Galv. % |
|---|---|---|---|---|
| Lorain, Ohio | 13.75 | +3.50 | +1.75f | +19.50f |
| Aliquippa, Pa | 13.75 | +3.50 | 3.25a | +14.50a |
| Sparrows Pt., Md | 17.25 | +List | | |
| Benwood, W. Va | 13.75 | +3.50 | | |
| Youngstown, O | 13.75 | +3.50 | 3.25 | +14.50a |
| Indiana Harbor, Ind | 12.75 | +4.50 | 2.25ab | +15.50a |
| Sharon, Pa | 13.75 | +2.50 | 3.25ab | +13.50ab |
| Wheatland, Pa | 13.75 | +3.50 | 3.25a | +14 0a |
| Etna, Pa | 13.75 | +3.50 | 50dc | |
| Fontana, Calif | 0.75 | +16.50b | +9.75ab | +27.50ab |

* Threaded and coupled. a 3½ to 4 in. b to 1 5 and 6 in. c 6 in. d Seamless 5 in.

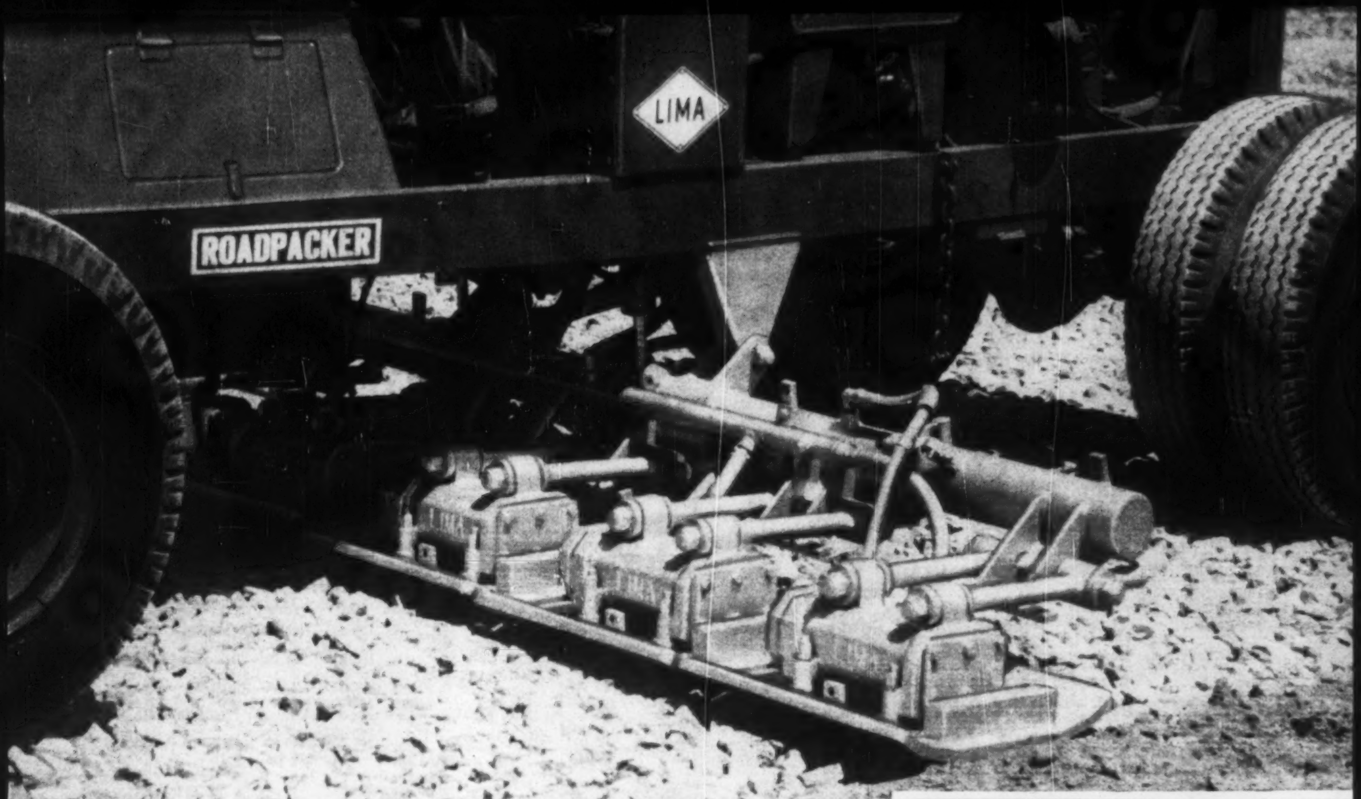
•† Extra quality. •‡ delivered. •# add 4% sales tax •a PRICE INDEXES or CENTRIFUGAL CAST IRON PIPE (Include carload freight allowed to city). These also serve as the HISTORICAL RECORD of THE $ PER NET TON PRICE of CLASS B, B&S, PIT CAST IRON PIPE. F.O.B. Foundry Price Indexes Birmingham, Ala., 125.8; Burlington, N. J., 134.6. For explanation of index see ENR Sept. 29, 1955 page 139. •b Extra strength. •c 4-in., $130. •d SS361-A. •f 21 in. •g culvert pipe; reinf., ASTM C 75-56. •h reinf., ASTM C 75-54. •i reinf., ASTM C 76-55. •j centrispun. •k less 2% disc. for cash. •l fob plant. •m truck del. •n LCL del., fob truck. •p less 5% disc. 10th. •p freight allowed to destination in city. •u 35,000# minimum. •r less 2% disc. 10 days. •s 1 ft lengths. •u CSA A 60. •v standard strength. •w SS; add 20% for d.s. •x fob city. •y Reinforced. •z Upper value in range based on both truck lots and less than truck lots, fob city; lower value truck lots delivered. •A single strength. •B truckload. •C less 2% disc. 15th. •D ASTM 76-57. •E less 1% disc. 10 days. •F less 2% disc. 30 days. •G LCL. •H CL. •I fob origin, freight allowed. •J reinf. B14-15. •K Less 2% disc. 15 days. •L ASTM 13-57. •M ASTM 200-57. •N 2 ft lengths. Trucklots. •O add 2% Sales Tax. •P 18 in. •Q less 1% disc. 10th. •R revised to show carlot instead of trucklot. •S ASTMC 72, 12" 1.55, 24" 4.00. •T Second price transite pipe.

**WROUGHT STEEL PIPE**, butt or continuous weld: Deduct (−) or add (+) these "discounts" from or to the following carlot list prices to get mill prices. Price per ft. (based on approx. $200 per net ton): 2½ in., 58½¢; 3 in., 78½¢; 3½ in., 92¢; 4 in., $1.09; 5 in., $1.48; 6 in., $1.92. Add freight for destination price.

**WROUGHT IRON PIPE**, lap weld: List prices per ft. same as for wrought steel pipe, but add these "discounts" to get Pittsburgh mill price. 2½ to 3 in., black 106%, galv. 139%; 4 to 6 in., black 103%; galv. 133%. Add freight for destination price.

### See following ENR issues for OTHER PRICES:

- Clay Products, Lime, Plaster, Paint, Roofing: Last, Dec. 1: Next, Dec. 22.
- Wage Rates, Building Board, Lath, Insulation: Last, Dec. 8: Next, Dec. 22.
- Cement, Aggregate, Ready Mixed Concrete, Asphalt: Last, Dec. 8: Next, Jan. 5.



*MODEL D ROADPACKER*—International favorite for high-speed, high-production consolidation on highway and airport construction.

# Vibrating shoes consolidate fast, deep for profitable single-course construction!

100% consolidation of subbase materials is often possible in only one pass with a Lima Roadpacker. High-speed vibrating action fills voids, keying materials to depths of 12 in. and more.

### Fewer courses, passes

Single-course construction with a Roadpacker is more profitable, because you need lay fewer courses and make fewer passes than with less efficient consolidation equipment.

Working widths can be varied up to 13 ft., 1 in. End shoes fold up for highway travel at speeds to 30 mph. Roadpacker works at speeds from 20 to 95 fpm; consolidates up to 600 tons per hour. Works forward or in reverse, never shoves material. Self-propelled; gasoline or diesel engine. Easy to operate; good visibility. Optional widener attachment is available to replace trench rollers.

Lima Roadpackers are easy to maintain. Hydraulically operated vibratory shoe mechanisms are completely sealed from abrasive dust; maintenance free.

### Super model available

Lima also offers a new 12-shoe *Super* Roadpacker for extra-high-production consolidation on large construction jobs such as superhighways, air bases and earth-fill dams. It has more than double the consolidating capacity of any multiple shoe vibratory machine!

Learn more about the profit-making features of Lima Roadpackers. See your nearby Lima distributor today or write to Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

LIMA

QUALITY
IS RECOGNIZED
THROUGHOUT
THE WORLD

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

**LIMA** Construction Equipment Division, Lima, Ohio
BALDWIN · LIMA · HAMILTON
6024
Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment

BALDWIN BLH LIMA-HAMILTON

# MATERIALS PRICES

Monthly Market Quotations by ENR Field Reporters

## LUMBER, TIMBER, PLYWOOD PER M FT.B.M., CARLOAD LOTS F.O.B.

SOUTHERN PINE AND DOUGLAS FIR

**All Southern Pine is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face)**

*All Fir boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1. Lengths up to 20 ft. (Prices in italics)*

| | | 1x6 s4s | 1x8 s4s | 2x4 s4s | 2x6 s4s | 2x8 s4s | 2x10 s4s | 3x12 Rgh | 6x12 Rgh | 12x12 Rgh | LONG LEAF Y. P. Merchantable grade up to 20 ft. 2x12 Rgh | LONG LEAF Y. P. 12x12 Rgh | FIR PLYWOOD 5/8" Interior plyscored C-D gr. | FIR PLYWOOD 3/4" Plyform grade* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Atlanta** | n† | **$ 90.00** | **$ 90.00** | **$ 82.00** | **$ 90.00** | **$ 90.00** | **$ 95.00** | **$125.00** | ...... | ...... | **$135.00** | **$155.00** | $125.00 | $270.00 |
| **Baltimore** | o | **95.00** | **95.00** | **101.50** | **99.00** | **105.00** | **105.00** | **124.00** | | | **175.00** | **190.00** | 173.00 | 265.00 |
| | | *116.00g* | *120.00g* | *123.00g* | *124.00g* | *124.00g* | *124.00g* | *148.00g* | *$180.00* | *$170.00* | ...... | ...... | | |
| **Birmingham** | n†r | **85.00** | **87.00** | **84.00** | **86.00** | **91.00** | **97.00** | **116.00** | ...... | ...... | **120.00** | **173.00** | 120.30 | 204.50 |
| | | *80.00* | *80.00* | *83.00* | *81.00* | *81.00* | *98.00* | *88.00* | *85.00* | *93.00* | ...... | ...... | | |
| **Boston** | ns | **106.00f** | **107.00f** | **109.00f** | **109.00** | **109.00f** | **125.00a** | ...... | ...... | ...... | ...... | ...... | 160.00c | 290.00c |
| | | *111.00* | *111.00* | *119.00* | *119.00* | *119.00* | *129.00* | *155.00* | *157.00* | *174.00* | | | | |
| **Chicago** | ** | **112.00** | **115.00** | **109.00** | **123.00** | **131.00** | **132.00** | **127.00** | ...... | ...... | **155.00** | **155.00** | 147.00 | 239.00 |
| | | *116.00* | *116.00* | *129.00* | *127.00* | *127.00* | *128.00* | *136.00* | *136.00* | *136.00* | ...... | ...... | | |
| **Cincinnati** | n* | **98.00** | **98.75** | **93.50** | **94.00** | **99.50** | **107.25** | **115.00** | ...... | ...... | **132.00** | **118.75** | 89.00f | 165.00f |
| | | *100.25* | *103.50* | *101.00* | *103.75* | *106.00* | *110.75* | *135.50* | *135.50* | *135.50* | ...... | ...... | | |
| **Cleveland** | o** | **98.00** | **100.00** | **102.00** | **98.00** | **102.00** | **108.00** | ...... | ...... | ...... | ...... | ...... | 118.85a | 205.15 |
| | | ...... | ...... | *115.00* | *110.00* | *112.00* | *116.00* | *140.00* | *140.00* | *140.00* | ...... | ...... | | |
| **Dallas** | ‡ | **95.00k** | **99.00k** | **103.00k** | **103.00k** | **103.00k** | **106.00k** | **135.00** | ...... | ...... | **138.00** | **160.00** | 112.50ac | 195.00ac |
| **Denver** | n* | *Not in stock* | | *118.00* | *118.00* | *118.00* | *120.00* | *177.00* | *197.00* | *197.00* | ...... | ...... | 146.50a | 233.00a |
| **Detroit** | ‡ | **140.00** | **142.50** | **142.00** | **138.00** | **145.50** | **145.00** | ...... | ...... | ...... | **153.50** | ...... | 120.00gca | 209.00gca |
| | | *132.25* | *13? .25* | *143.25* | *141.50* | *150.00* | *155.50* | *194.00* | *211.00* | *211.00* | ...... | ...... | | |
| **Kansas City** | tn | **120.00** | **120.00** | **120.00** | **125.00** | **128.00** | **150.00** | ...... | ...... | ...... | ...... | ...... | 135.00a | 215.00a |
| | | *120.00* | *120.00* | *120.00* | *125.00* | *128.00* | *132.00* | *165.00* | *225.00* | *225.00* | ...... | ...... | | |
| **Los Angeles** | xnu | *91.00* | *91.00* | *91.00* | *91.00* | *91.00* | *91.00* | *130.00* | *140.00* | *140.00* | ...... | ...... | 120.00 | 210.00 |
| **Minneapolis** | ov | *140.00* | *140.00* | *140.00* | *140.00* | *140.00* | *140.00* | *185.00* | *185.00* | *185.00* | ...... | ...... | 195.00 | 305.00 |
| **Montreal** | *bp | **83.00a** | **89.00a** | **83.00a** | **83.00a** | **99.00a** | **125.00a** | ...... | ...... | ...... | **120.00** | **120.00** | 119.25 | 225.95 |
| | | *160.00* | *160.00* | *160.00* | *160.00* | *160.00* | *160.00* | *168.00* | *170.00* | *170.00* | ...... | ...... | | |
| **New Orleans** | †n | **89.00** | **89.00** | **90.00** | **95.00** | **95.00** | **98.00** | **126.00** | ...... | ...... | **160.00** | **155.00** | 119.00 | 200.71 |
| | | *99.00* | *99.00* | *98.00* | *101.00* | *101.00* | *101.50* | *117.50* | *111.00* | *111.00* | ...... | ...... | | |
| **New York** | | **112.50** | **115.00** | **116.00** | **124.00** | **124.00** | **127.00** | **225.00aa** | ...... | ...... | **250.00z** | **250.00z** | 115.20 | 195.60 |
| | | ...... | ...... | *116.00* | *118.00* | *118.00* | *121.00* | *169.00* | *174.00* | *174.00* | ...... | ...... | | |
| **Philadelphia** | nt | **108.00** | **108.00** | **95.00** | **108.00** | **110.00** | **110.00** | **125.00** | ...... | ...... | ...... | ...... | 130.00ha | 212.00ha |
| | | ...... | ...... | *117.00* | *120.00* | *120.00* | *123.00* | *142.50* | *145.00* | ...... | ...... | ...... | | |
| **Pittsburgh** | st | **135.00** | **135.00** | **135.00** | **135.00** | **140.00** | **140.00** | **165.00** | ...... | ...... | **145.00** | **185.00** | 225.00a | 295.00a |
| | | *135.00* | *115.00* | *145.00* | *150.00* | *150.00* | *150.00* | *225.00* | *225.00* | *225.00* | ...... | ...... | | |
| **St. Louis** | ‡ln | **111.00** | **113.00** | **121.00d** | **121.00d** | **121.00e** | **120.00e** | ...... | ...... | ...... | ...... | ...... | 140.00ach | 244.00ach |
| | | ...... | ...... | *129.00* | *129.00e* | *129.00e* | *129.00e* | *183.00e* | *183.00e* | *183.00* | ...... | ...... | | |
| **San Francisco** | nx | *67.00* | *67.00* | *80.00* | *80.00* | *80.00* | *80.00* | *88.00* | *110.00* | *111.00* | ...... | ...... | 87.00h | 160–163j |
| **Seattle** | n† | *54.00* | *57.00* | *67.00* | *68.00* | *68.00* | *71.00* | *81.50* | *86.50* | *86.50* | ...... | ...... | 100.00aeg | 190.00aeg |
| **Toronto** | * | **84.00a** | **88.00a** | **82.00a** | **81.00a** | **86.00** | **85.00a** | **98.00a** | ...... | ...... | **86.00a** | ...... | 216.00 | 216.00 |
| | | *89.00* | *92.00* | *100.00* | *100.00* | *103.00* | *104.00* | *118.00* | ...... | | ...... | ...... | | |

† F. o. b. mill. * F. o. b. city, CL, out of yard. ** F. o. b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL.

LUMBER: Bold Face Type, Southern Pine. Italics Douglas Fir. •a Spruce. •b Federal tax exempt, add 6% mun. & prov. tax. •c 5M lots. •d 8, 10, & 12 ft. lengths. •e 8 to 16 ft. lengths. •f Hemlock •g No. 1 common. •j 8 ft. lengths. •k No. 3 common. •l Add 2% sales tax. •n Less 2% disc. 10 days. •o Less 2% disc. 10th. •p Less 1% disc. 10 days. •q fir: $80.25 in truck lots, fob job or CL, f.o.b. city. •r For f.o.b. city price add $8 for pine, $38 for fir eff. 1/1/58. •s asd trucklots. •t trucklots del. •u Retail LCL yard. •v Retail LCL, del. •w add 6% mun. & Prov. tax. •x add 4% sales tax. •z Hondouras Pine. •aa Domestic long leaf

* PLYWOOD (Plyform, oiled and edge sealed): Douglas fir, 4′ x 8′ panels, 5-ply sanded 2 sides, carloads lots, delivered per 1000 sq. ft. surface. Seattle base price, Exterior, waterproof, 5/8", $146.00: 3/4". $164.00. •a Delivered. •c Truck lots. •d A-C exterior. •e LCL. •f less 1%, 5 days. •g less 2% for cash. •h less 2% disc, 10 days •l add 2% sales tax. •j f.o.b. mill

## GLASS, EXPLOSIVES, CHEMICALS, PILES, TIES

| | WINDOW GLASS<br>Discounts from jobbers list, Feb. 1, 1950a<br>Single or Double Strength<br>A quality | WINDOW GLASS<br>B quality | EXPLOSIVES<br>Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 500 lb. lots |
|---|---|---|---|
| Atlanta | 78% | 80%d | $0.2595 |
| Baltimore | 74%b | 74%b | .2795 |
| Birmingham | 82%c | 82%c | .2595 |
| Boston | 72+10%eg | 72+10%eg | .2795 |
| Chicago | 72% | 72% | .2795 |
| Cincinnati | 74% | 74% | .2595 |
| Cleveland | 74-2-10% | 74-2-10% | .2595 |
| Dallas | 76% | 76% | .2870 |
| Denver | 73.5% | 73.5% | .2795 |
| Detroit | 72-10-10% | 72-10-10% | .2795 |
| Kansas City | 76-10-10% | 76-10-10% | .2795 |
| Los Angeles | $12.88/17.32 | $10.45/14.13 | .2795 |
| Minneapolis | 71-10% | 71-10% | .2795 |
| Montreal | 40-10-5%a | 40-10-5%a | 23.20h |
| New Orleans | 76%d | 76%d | .2795 |
| New York | 79% | 79% | .5130g |
| Philadelphia | 80% | 80% | .2795 |
| Pittsburgh | 72% | 72% | .2595 |
| St. Louis | 72-10-10%ef | 72-10-10%ef | .2795 |
| San Francisco | 60% | 73% | .2795 |
| Seattle | $8.85/11.55di | $6.41/8.67di | .2795 |
| Toronto | $6.49/9.57 | $5.90/8.70 | |

Price of 60% Ammonia Gelatin is $0.15 per lb. higher than 40% in U. S., $1.75 per 100 lbs. higher in Canada.

Glass: Jobber's list price per box of 50 sq. ft., 20 x 20 in. ss, $42.75 for A quality, $37.50 for B quality; 20 x 20 in., ds, $60.00 for A quality, $52.75 for B quality. •a sales tax extra. •b discount from 6/15/52 list. •c single strength; 83% for double strength. •d discount from 8/1/58 list. •e less 2% 10 days. •f add 2% sales tax. •g less 1%/cash. •h less 2%/cash. •i 20 boxes min.

Explosives: Cartridges of 1¼" diameter or over, in standard lengths. •g deliveries in certain areas must be by truck or by truck and boat, requiring extra charge. •h F.o.b. Beloeil (near Montreal), per 100 lb., lots under 2000#, wood cases, forcite, 40%. Forcite 60%, $24.30 In fiber cases: forcite 40%, $24.05; forcite 60%, $25.80.

40% Ammonia Gelatin price ranges in other than urban areas, per lb:
(except Seismograph Grades)

| | C/L 300,000 lb. lots | 10,000 lb. lots | 2,000 lb. lots | 200 lb. lots |
|---|---|---|---|---|
| Group 1* | $0.2095 | $0.2195 | $0.2545 | $0.2695 |
| Group 2† | .2170 | .2270 | .2620 | .2770 |

*All areas except those in Group 2 and N.J. cities of Bayonne, Hoboken, Jersey City, No. Bergen, Union City and Weehawken † Florida counties of Manatee, Hardee, Highlands, Okeechobee, St. Lucie and south thereof; Idaho; Maine; Montana; New Mexico counties of Catron, Socorro, Lincoln, De Baca, Roosevelt and south thereof; Texas counties of Bailey, Lamb, Hale, Floyd, Motley, Cottle, Hardeman, Foard, Knox, Haskell, Jones, Taylor, Coleman, McCulloch, San Saba, Burnet, Williamson Milan Robertson Leon, Houston Angelina, Nacogdoches, Shelby and south thereof.

### PILES

Prices per linear foot, fir and pine, rough peeled, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine under fifty feet based on freight from mid-South, over fifty feet, on freight from deep South.

| Dimensions | Points | Length | By Rail<br>Pine*§ | By Rail<br>Fir |
|---|---|---|---|---|
| 12" at butt | 6-in. | 30 to 39-ft. | $0.42a | .... |
| 12"—2-ft. from butt | 6-in. | 40 to 44-ft. | .91 | .... |
| 12"—2-ft. from butt | 6-in. | 45 to 49-ft. | .97 | .... |
| 12"—2-ft. from butt | 6-in. | 50 to 54-ft. | 1.01 | .... |
| 12"—2-ft. from butt | 6-in. | 55 to 59-ft. | 1.07 | .... |
| 14"—2-ft. from butt | 6-in. | 60 to 64-ft. | 1.14 | .... |
| 14"—2-ft. from butt | 6-in. | 65 to 69-ft. | 1.21 | .... |
| 14"—2-ft. from butt | 6-in. | 70 to 74-ft. | 1.34 | $1.40 |
| 14"—2-ft. from butt | 6-in. | 75 to 79-ft. | 1.41 | 1.40 |
| 14"—2-ft. from butt | 5-in. | 80 to 84-ft. | 1.54 | 1.45 |
| 14"—2-ft. from butt | 5-in. | 85 to 89-ft. | 1.67 | 1.54 |

* Pine piling over 90 feet available only in limited quantities. § ASTM Class B
• a, trucked in from N. J.

### RAILWAY TIES

Prices f.o.b. per tie box carload lots:

| | | 6" x 8" x 8′<br>Untr. | 6" x 8" x 8′<br>Tr. | 7" x 8" x 8′6"<br>Untr. | 7" x 8" x 8′6"<br>Tr. |
|---|---|---|---|---|---|
| Birmingham* | Hardwood, Grade 3 | $1.70 | $2.55 | Gr. 5 $2.25 | $3.33 |
| | Grade 2 | 1.50 | 2.35 | " 4 2.10 | 3.18 |
| | Grade 1 | 1.15 | 2.00 | " 3a 1.70 | 2.78 |
| Chicago | Red Oak | 2.85–3.00 | 4.00a–4.10 | 3.90 | 4.75–5.00 |
| New York | Mixed Hardwood | 3.45 | 5.10 | 4.30 | 6.50 |
| | Mixed Oak | 3.55 | 5.20 | 4.40 | 6.60 |
| Philadelphia | Mixed Oak | 3.80i | 3.97 | .... | 4.57 |
| St. Louis | Mixed Oak | 2.65 | 3.75a | 3.10h | 4.20ah |
| San Francisco | Douglas Fir | 1.90ef | 3.05ef | 2.20ef | 3.10ca |

Tr.—Treated: Untr.—Untreated. aCreosoted. c Empty cell. e Green f f.o.b. cars. g 7 x 9 x 8′6" * Add 75¢/tie freight charge to Birmingham. •h 7" x 9" x 8½. •i Mixed Hardwood

## CHEMICALS

Water, sewage treatment, road work, carlots, f.o.b. works

| | |
|---|---|
| Chlorine cylinders, liquid, per lb. freight allowed, N.Y. State | $ .11 |
| Calcium chloride, 77–80%, flaked, 100-lb. paper bag, ton | 32.00 |
| Silicate of soda, 52 deg., in drums, per 100 lb. | 2.65 |
| Soda ash, 58%, in paper bags, per 100 lb. dense | 1.90 |
| Sulphate of aluminum, commercial, in 100-lb. bags | 2.05 |
| Sulphate of copper in bags, 99% per 100 lb., reg., 25.2% copper content | 13.00 |

### See following ENR issues for OTHER PRICES:

- Wage Rates, Building Board, Lath, Insulation: Last, Dec. 8; Next, Dec. 22.
- Cement Aggregate, Ready-Mixed Concrete: Asphalt: Last, Dec. 8; Next, Jan. 5.
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Dec. 1; Next, Dec. 22.

# Construction Reports

## Bids Asked—Low Bidders—Contracts Awarded—

*Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, MARIE MORAVSIK, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.*

### NEW ENGLAND

#### HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
December 21 Maine　December 22 New Hampshire

#### BUILDINGS—BA

▲ **Conn., Greenwich**—SCHOOL—BA 1/5—Town, Dpt. P. Wks., Town Hall, Western Junior High School, Post Rd., Byram. $1,675,000. Plans deposit $50. J. Gordon Carr, 80 W. 40 St., New York, N. Y., archt. Frederic Wood, First National Bank Bldg., engr. CD 12/2.

#### HEAVY CONSTRUCTION—LB & CA

▲ **Daniel O'Connells Sons, Inc.**, 480 Hampden St., Holyoke, Mass., LB **$2,377,000**, Contr. 3, sewage treatment facility, PITTSFIELD, MASS. City, Sewer Comn., Dpt. P. Wks., 33 Pearl St., Pittsfield, Mass. Bids Dec. 7. CD 11/22.

#### BUILDINGS—LB & CA

▲ **George A. Fuller Co.**, 11 Beacon St., Boston, Mass., CA approx. **$1,800,000**, MEDICAL SCHOOL addn. to Bldg. B-1, incl. alterations, BOSTON, MASS. Harvard University, Medical School, 25 Shattuck St., Boston, Mass. Shepley, Bulfinch, Richardson & Abbott, 1 Court St., Boston, Mass., archts. Abraham Wolf & Assoc., Inc., 27 School St., Boston, Mass., structural engrs. Bids Nov. 16. CD 10/26, under Mass., Roxbury.

▲ **Frank W. Johnson & Son**, 10 Dunn St., East Providence, R. I., CA Est. **$1,650,000**, SUPERMARKET, COVENTRY, R. I. American Market, c/o contractor.

### MIDDLE ATLANTIC

#### HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
December 29 Pennsylvania
STREETS AND ROADS
December 20, 27 Maryland　December 29 Pennsylvania

#### BUILDINGS—BA

▲ **New York**—SCHOOL IMPRVS.—BA 12/19—Deputy Supt. Schools, Bureau Constr., 42-15 Crescent St., 4 Floor, Long Island City, Zone 1, general contract, plumbing and drainage, heating and ventilating modernization Public School 215, Brooklyn Boro; Public School 153; Public School 149, Queens Boro. Individual bids on each item for each school is required; A combination lump sum bid on each item for each school is invited.

▲ **N. Y., New York**—SCHOOL—BA 12/19—Deputy Supt. Schools, Bureau Constr., 42-15 Crescent St., 4 Floor, Long Island City, Zone 1, general contract, plumbing and drainage, heating and ventilating, electrical work and lighting fixtures at P.S. 74, E. 115 St. and 3 Ave., Manhattan Boro. $2,500,000. Plans deposit $25 general, $10 mechanical trades. CD 7/5.

▲ **N. Y., Brooklyn**—SCHOOL—BA 12/21—Deputy Supt. Schools, Bureau Constr., 42-15 Crescent St., 4 Floor, Long Island City, Zone 1, general contract, plumbing and drainage, heating and ventilating, electrical work and lighting fixtures for Junior High School 271, Saratoga Ave., Herkimer and Fulton Sts., Brooklyn Boro. $3,500,000. Plans deposit $35 general, $15 mechanical trades. CD 1/25.

▲ **N. Y., North Babylon**—SCHOOLS—BA 12/21—Bd. Educ. UFSD No. 3, Weeks Rd., elementary school, $1,150,000; Junior High School, $1,750,000. Plans deposit $50. Extended date. Kelly & Gruzen, 10 Columbus Circle, New York, archts. Joseph R. Loring & Assoc., 25 W. 45 St., New York, engrs. CD 11/22.

▲ **N. Y., New York**—BOWLING CENTER—BA 1/3—Jesse Weingart, c/o Maspeth Bowl, 5301 14 St., Elmhurst, N. Y., (selected list bidders) 3 floor bowling center, Grand Central Terminal Waiting Room. $2,000,000. Ferrari & Tricarcio, 120 W. 42 St., Zone 36, archts. Joseph Bressman, 118 E. 28 St., Zone 16, mechanical engr. Seelye, Stevenson, Value & Knecht, 101 Park Ave., Zone 17, structural engrs. CD 10/4.

▲ **N. Y., Plattsburgh**—PHYSICAL EDUCATION—BA 1/11—State Dpt. P. Wks., State Office Bldg., Albany, Spec. 15725-C-H-S-E-EL, physical education, Bldg. No. 11, State University College of Education. Approx. $2,500,000. Plans deposit $50 general. CD 1/8/59.

▲ **N. Y., New York**—BORGIA BUTLER HOUSES—BA 1/10—New York City Housing Auth., 299 Broadway, Zone 7, Base Bid A. rein-con. design and Base Bid B structural steel design **(1)** fdns. and general contract **(2)** heating and ventilating, **(3)** electrical work and **(4)** plumbing Borgia Butler Houses, Proj. No. NYS-84, Section 1, which incl. Bldg. No. 1, incl. community center; No. 3, incl. boiler room; No. 4, No. 6 incl. children's center, and toy storage shelter, E. 171 St., Webster Ave., E. 169 St. and line separation Section 1 from Section II, as more fully indicated on drawings. Plans deposit $75, furnishing, installation elevators for Borgia Butler Houses, Section 1, incl. Bldg. Nos. 1, 3, 4 and 6, Bronx Boro. $28,000,000. Plans deposit $25. CD 9/13, under LB.

#### HEAVY CONSTRUCTION—LB & CA

▲† **Atlantic Gulf & Pacific Co.**, 15 Park Row, New York 38, N. Y., LB **$1,670,352**, (11 bidders), dredging Schodack Creek, tributary of Hudson River which is about 15 mi. south of Albany, Columbia Co., CIVENG-30-075-61-13, NEW YORK. U. S. Eng., 111 East 16 St., New York 3, N. Y. Bids Dec. 7. CD 12/2.

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton, Bids opened 12/7,

**The Conduit & Foundation Corp.**, 158 N. 20 St., Phila., Pa., LB **$2,698,035**, (10 bidders), foundations and substructure, 1,800 ft. 10-lane Interstate Rte. 80 bridge over Hackensack River, First Ave., Ridgefield Park, 2,400 ft. westerly to Hudson St., Hackensack, Bergen Co. CD 11/17.

▲ **NEW JERSEY**—New Jersey Turnpike Comn., Admin. Bldg., New Brunswick, Bids opened 12/1,

**Public Constructors, Inc.**, Blackwood, N. J., LB **$2,762,712**, (11 bidders), grading, drainage, structures and incid. work Carteret Interchange of Turnpike. Contr. R-77, Middlesex Co. CD 10/31.

▲ **PENNSYLVANIA**—State Hy. Dpt., Harrisburg,

**Glasgow, Inc.**, Willow Grove Ave. & Limekiln Pike, Glenside, Pa., CA **$2,265,763**, divided hy. rein.-con. pvt. 24 ft. wide, each side of earth median variable in width, 5.58 mi., Traffic Rte. 3, between West Chester and Newtown Square, 5 bridges, Chester and Delaware Counties. Bids Nov. 18. CD 11/28, under LB.

▲† **Dravo Corp.**, Neville Island, Pittsburgh, Pa., CA **$14,938,579**, constr. locks at Maxwell Locks and Dam on Monongahela River, near Brownsville, ENG-36-058-61-16, PENNSYLVANIA. U. S. Eng., 925 New Federal Bldg., Pittsburgh, Pa. Bids Nov. 29. CD 11/8.

▲† **U S. Eng.**, 2635 Abbottsford Road, Phila., Pa., cancelled bids to have been opened about Dec. 8, stone-faced earth levee, storm drainage collection and pumping system, access road, and subdrainage system, south bank of Lehigh River between the Hill to Hill bridge and point about 250 ft. east of Minsi Trail Bridge, ENG-36-109-61-17, PENNSYLVANIA. **$4,000,000.** CD 11/21.

#### BUILDINGS—LB & CA

▲ **Planet Constr. Corp.**, 11 W. 42 St., New York 36, N. Y., CA **$2,472,000**, general contract JUNIOR HIGH SCHOOL 231, Springfield Blvd. and Conduit Ave., Queens Boro, NEW YORK. Deputy Supt. Schools, Bureau Constr., 4 Floor, 42-15 Crescent St., Long Island City 1, N. Y. Bids Nov. 10, awarded Dec. 1. CD 11/14, under LB.

▲ **Colmar Constr. Co.**, 364 Gold St., Brooklyn 1, N. Y., LB **$4,045,000**, general contract HIGH SCHOOL, swimming pool, MOUNT VERNON, N. Y. Bd. Educ., 257 4 Ave., Mount Vernon, N. Y. Bids Dec. 6. CD 11/14; **Hauxwell & Smith, Inc.**, 46 Broad St., Port Chester, N. Y., LB **$1,149,000**, heating and ventilating high school, swimming pool (Mount Vernon, N. Y.); **Luna Elec. Co., Inc.**, 381A McLean Ave., Yonkers, N. Y., LB **$693,500** electrical, high school, swimming pool (Mount Vernon, N. Y.);

**Karnes Plumbing & Heating Co.**, 315 N. Main St., Port Chester, N. Y., LB **$411,300**, plumbing high school, swimming pool (Mount Vernon, N. Y.).

▲ **Wilaka Constr. Co., Inc.**, 11 E. 44 St., New York 17, N. Y., CA **$1,811,000**, general contract PUBLIC SCHOOL, 199 W. 70 St. and West End Ave., Manhattan Boro, NEW YORK, N. Y. Deputy Supt. Schools, Bureau Constr., 42-15 Crescent St., 4 Floor, Long Island City 1, N. Y. Bids Nov. 15, awarded Dec. 1. CD 11/18, under LB.

▲ **Saul A. Cantor & Assoc.**, Hy. 9 and Ernstone Rd., Old Bridge, N. J., Owner Builds, **$3,000,000**, SHOPPING CENTER, Rte. 18, Browntown, Madison Twp., OLD BRIDGE, N. J. Harold Glucksman, 850 Broad St., Newark, N. J., archt.

▲ **Major Realty Co.**, c/o Matthew B. Weinstein, Rosemont Park, Pa., Owner Builds, **$14,000,000**, 33 story APARTMENT, Hopkinson House, 18 town HOUSES, Washington Square, Society Hill Sect., PHILA., PA. Stonorov & Haws, Architects Bldg., Phila., Pa., archts. Garfinkel & Marenberg, 100 W. 42nd St., New York, N. Y., structural engrs. Garber & Cohen, 1321 Arch St., Phila., Pa., mech. engrs.

▲ **R. M. Shoemaker Co.**, 245 S. 24th St., Phila., Pa., CA **$14,000,000**, Hopkinson APARTMENT HOUSE, 7th and Locust Sts., PHILA., PA. Major Realty Co., c/o Matthew B. Weinstein, 1030 E. Lancaster Ave., Rosemont, Pa. Stonorov & Haws, 117 S. 17th Sts., Phila., Pa., archts. Garfinkle & Marinburg, 180 W. 42nd St., New York, N. Y., engrs. CD 12/6, under CA.

▲ **Disk Corporation**, Galveston Ave., Pittsburgh, Pa., CA Est. **$3,000,000**, 6 story, YWCA CENTRAL SERVICES BLDG., Wood St., between 3rd and 4th Aves., PITTSBURGH, PA. Young Women's Christian Assn. of Pittsburgh, 405 South Dithridge St., Pittsburgh, Pa. Skidmore, Owings & Merrill, 425 Park Ave., New York 22, N. Y., archts. Awarded Oct. 6.

▲ **Jerry Wolman Constr. Co.**, 1703 Eastwest Hy., Silver Spring, Md., Owner Builds, **$2,000,000**, 250 unit APARTMENT, Blue Ridge and Georgia Aves., WHEATON, MD. Edmund Dreyfuss, 1019 15 St. N.W., Wash., D. C., archt.

▲† **J. W. Batson Co., Inc.**, P.O. Box 13307, Walnut Hill Station, Dallas, Tex., CA **$12,212,800**, FEDERAL OFFICE BLDG. NO. 8, Food and Drug Administration, WASH., D. C. General Services Admin., 7 and D Sts. S.W., Wash., D. C. CD 11/7, under LB.

▲† **George Hyman Constr. Co.**, 1010 Vermont Ave., N.W., Wash., D. C., LB **$7,740,000**, (6 bidders), alterations to existing bldg. and addition of six story wing and central equipment bldg., MUSEUM OF NATURAL HISTORY, Smithsonian Institute, WASH., D. C. General Services Admin., 7th and D Sts. S.W., Wash., D. C. Mills, Petticord & Mills, 3308 14th St. N.W., Wash., D. C., archts. Bids Dec. 6. CD 10/27

▲ **Mutual Builders, Inc.**, 1301 Abingdon St., Alexandria, Va., CA Est. **$1,600,000**, 163 unit APARTMENT, 3500 Block, 6th St. S.E., WASH., D. C. Trenton Park, Inc., 101 E. Glebe Rd., Alexandria, Va., Sheridan & Behm, 2030 16 St., Arlington, Va., archts.

### SOUTH

#### HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
December 21 Louisiana

▲† **Kentucky and Ohio**—BA 2/16—U. S. Eng., 237 4 Ave., Huntington 18, W. Va., dam and lock emergency gates, concrete dam consisting of weir, sill, stilling basin, 13 concrete piers, twelve 100 ft. long steel tainter gates and operating machinery, access bldg., crane bridge, four upstream emergency bulkheads, an upstream bulkhead crane with auxiliary crane and lifting beam, etc. Captain Anthony Meldahl Locks and Dam, Ohio River, Bracken Co. Ky., about 1.7 mi. below Chilo, O., CIVENG-46-022-61-34. Over $10,000,000. Plans deposit $10. CD 9/20.

(Continued on p. 66)

#### *PROJECTS COVERED*

##### *By Size*

**Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000; other public works $88,000; Industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of Interest to American contractors.**

##### *By Regions & Classes of Construction*

**(In order of Listing)**

**BIDS ASKED**
**LOW BIDDERS**
**CONTRACTS AWARDED**
**New England**
**Middle Atlantic**
**South**
**Middle West**
**West of Mississippi**
**Far West**

**PROPOSED WORK**
**Water Supply**
**Sewers, Waste Disposal**
**Bridges**
**Streets & Roads**
**Earthwork, Waterways**
**Public Buildings**
**Mass Housing**
**Commercial Buildings**
**Industrial Buildings**
**Unclassified**

##### *In These Stages*

**PROPOSED WORK: Before and including appointment of engineers or architects.**
**BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.**

**SOON LETS CONTRACT: SLC**

**LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.**

**CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.**

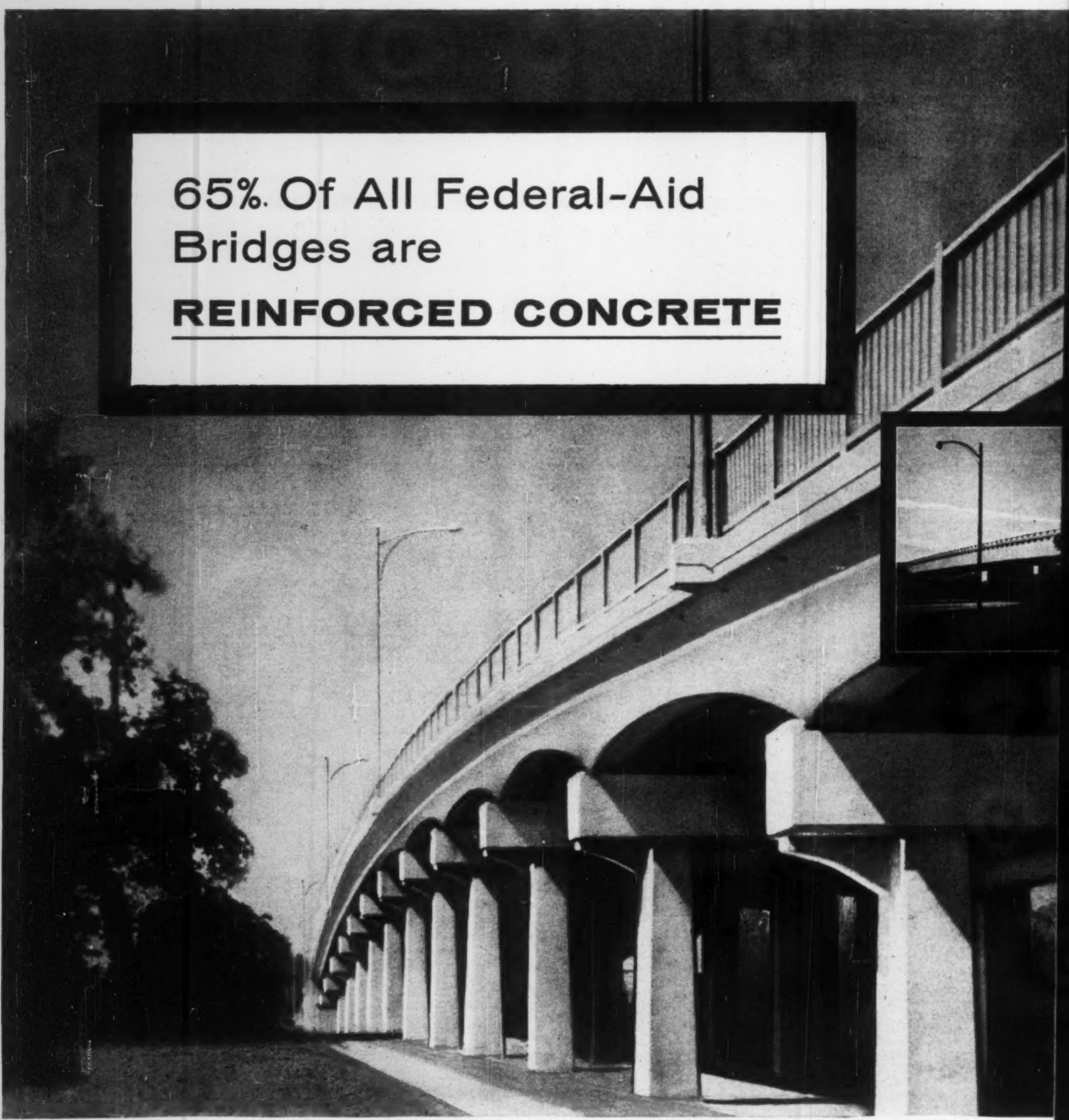
**CD dates shown are of Construction Daily Issue in which last previous report was published.**
**OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.**

##### *Symbols and Abbreviations Include:*

| | |
|---|---|
| † | Federal Government |
| ▲ | Project of $1,000,000 or over. |
| ENR | Engineering News-Record |
| CD | Construction Daily |

**For additional reports see Construction Daily.**

# 65% Of All Federal-Aid Bridges are REINFORCED CONCRETE



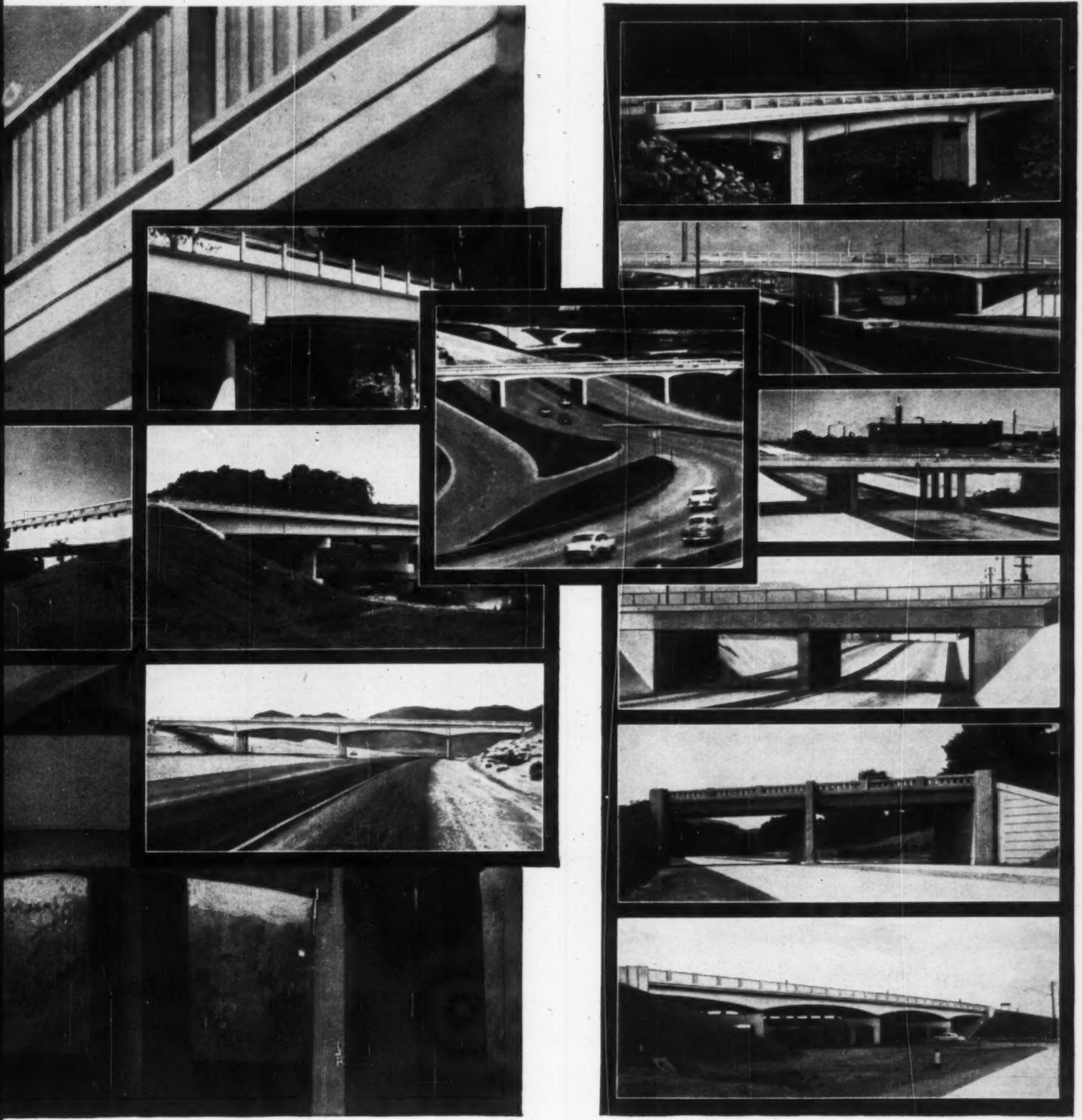
Reinforced concrete was the preferred material for most highway bridge projects, according to figures released by the U.S. Bureau of Public Roads.

Of 14,703 bridges authorized for federal-aid during the years 1957, 1958, and 1959, 9,639 were Reinforced Concrete, 3,696 were steel, and 1,368 were prestressed concrete. The following table shows the wide acceptance of Reinforced Concrete and comparative cost figures.

**BRIDGE COSTS**

| | Reinforced Concrete | Structural Steel | Prestressed Concrete |
|---|---|---|---|
| Total Bridges | 9,639 | 3,696 | 1,368 |
| % of Total | 65.4 | 25.3 | 9.3 |
| Total Cost | $506,806,000 | $995,682,000 | $202,900,000 |
| Cost per Lineal Foot | $535.00 | $1,000.00 | $770.00 |

With reinforced concrete you also enjoy the advantages of complete flexibility to meet the requirements of varying elevations and terrain. On your next project, design for this lower cost, versatile construction material.



## Federal-aid projects constructed during 1957, 1958, and 1959.

| System | No. of Bridges | | | Length of Bridges in Miles | | | Cost of Bridges in units of $1,000.00 | | | Percentages | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | By Length | | | By Cost | | |
| | Conc. | Steel | P. Conc. | Conc. | Steel | P. Conc. | Conc. | Steel | P. Conc. | Conc. | Steel | P. Conc. | Conc. | Steel | P. Conc. |
| **Primary** | 1,696 | 641 | 219 | 34.332 | 40.313 | 10.847 | 91,194.7 | 147,838.8 | 31,324.2 | 40 | 47 | 13 | 33.8 | 54.6 | 11.6 |
| **Secondary** | 4,512 | 989 | 369 | 83.758 | 43.737 | 10.233 | 114,275.4 | 91,931.3 | 21,555.4 | 60.8 | 31.8 | 7.4 | 50 | 40.5 | 9.5 |
| **Urban** | 244 | 284 | 50 | 5.921 | 21.019 | 2.264 | 40,579.9 | 125,887.7 | 11,937.9 | 20.4 | 72 | 7.6 | 22.8 | 70.5 | 6.7 |
| **"D" funds*** | 663 | 194 | 82 | 11.118 | 8.718 | 2.701 | 22,091.7 | 24,345.6 | 7,639.5 | 49.5 | 38.5 | 12 | 41 | 45 | 14 |
| **Interstate** | 2,524 | 1,588 | 648 | 44.321 | 75.2 | 23.784 | 238,664.1 | 605,678.2 | 130,443.5 | 30.9 | 52.5 | 16.6 | 24.6 | 62 | 13.4 |
| **Grand Total** | **9,639** | **3,696** | **1,368** | **179.450** | **188.987** | **49.829** | **506,805.8** | **995,681.6** | **202,900.5** | **42.9** | **45.3** | **11.8** | **29.7** | **58.4** | **11.9** |

*Emergency federal highway aid funds voted in 1958.

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**CONCRETE REINFORCING STEEL INSTITUTE**

38 South Dearborn Street • Chicago 3, Illinois

20-6

(Continued from p. 63)

### HEAVY CONSTRUCTION—LB & CA

▲ **VIRGINIA**—Dpt. Hys., 1221 E. Broad St., Richmond, Bids opened 11/23,

Va.—**E. V. Williams Co.**, 1269 E. Princess Anne Rd., Norfolk, Va., LB **$96,178**, reconstr., imprvts. from 1.4 mi. east of the bridge, 1.2 mi., Rte. 6, Goochland Co., CD 10/28;

Va.—**Laramore Constr. Co., Inc.**, Box 1656, Danville, Va., LB **$115,707**, reconstr. and bit. surf. from 1 mi. east of Patrick and Henry County line to 0.14 mi. west of county line, 1.2 mi., Rte. 57, Henry and Patrick Counties;

Va.—**Appalachian Constr. Co.**, P. O. Box 637, Wise, Va., LB **$236,923**, reconstr. and b. conc. surf. from 2.4 mi. east of Norton to 0.3 mi. east of the intersection with Rte. 706 at Tacoma, Alternate Rte. 58, Wise Co.;

Va.—**Clyde R. Royals, Inc.**, 320 W. Pembroke Ave., Hampton, Va., LB **$250,734**, constr. parallel two-lane hy. adjacent to present road for 1.2 mi., between Sinclair Circle near Rte. 134 and Langley Circle, Rte. 258, City of Hampton;

Va.—**Echols Brothers, Inc.**, Drawer 869, Staunton, Va., LB **$103,292**, 0.3 mi. imprvs., incl. curbs and gutters, from intersection of Rte. 7 to north city limits of Berryville, Rte. 340, Clarke Co.;

Va.—**Garrett, Moon & Pool, Inc.**, Blackstone, Va., LB **$99,690**, 0.7 mi. widening, curb and gutter and imprvs. from intersection of Maryland Ave. to south of Shenandoah, Page Co.;

Va.—**Talbott, Marks & Co., Inc.**, Clarksville, Va., LB **$1,118,368**, 1.7 mi. grading, draining from north of intersection with Rte. 7 to 1.5 mi. north of the intersection with Rte. 123, Fairfax Co.

▲† **E & I Inc.**, 3000 W State Rd. 84, Fort Lauderdale, Fla., CA **$2,208,132**, construction canal and gate structures Central and Southern Florida Flood Control and Drainage Project, Matrin and St. Lucie Counties, near Stuart, FLORIDA. U. S. Eng., 575 Riverside Ave., Jacksonville, Fla. CD 11/16, under LB.

▲† **Robert E. Lee & Co., Inc.**, Box 6056, St. Petersburg Beach, Fla, LB **$1,999,000**, (23 bidders) construct Levee 67A, Levee 29, Section 3 and Control Structure 151, Central and Southern Florida Flood Control Project, CIVENG-08-123-61-26, FLORIDA, U. S. Eng., Box 4970, Jacksonville, Fla. Bids Nov. 29, CD 11/3.

▲† **Ralph Rogers & Co., Inc.**, 720 Argyle Ave., Nashville, Tenn., CA **$1,168,575**, concrete aggregate, Wheeler Dam Lock, Sheffield, ALABAMA, Tennessee Valley Authority, New Sprankles Bldg., Knoxville, Tenn. Grand total $2,371,875, awarded Nov. 23, CD 12/2;
**Alpha Portland Cement Co.**, 1204 20th St., Birmingham, Ala., CA **$300,825**, cement, Wheeler Dam Lock, Sheffield, (Alabama);
**Lehigh Portland Cement Co.**, 718 Hamilton St., Allentown, Pa., CA **$300,825**, cement, Wheeler Dam Lock, Sheffield, (Alabama);
**Lone Star Cement Corp.**, 2130 Highland Ave., Birmingham, Ala., CA **$300,825**, cement, Wheeler Dam Lock, Sheffield, (Alabama);
**Universal Atlas Cement, Div. U. S. Steel Corp.**, 10 Office Park Circle, Birmingham, Ala., CA **$300,825**, cement, Wheeler Dam Lock, Sheffield, (Alabama).

▲ **LOUISIANA**—State Dpt. Hys., Rm. 426, Headquarters Admin. Bldg., Baton Rouge, Bids 11/30,

**Flenniken Constr. Co.**, Box 650, Lake Charles, La., LB **$3,338,575**, c. conc. pavt. grade separation structures 5.825 mi. Lake Charles-Welsh Hy. (East of Chloe-US 165), SP Nos. 450-02-26 and 450-03-05, FAP No. I-10-1(25)38, Calcasieu and Jefferson Davis Parishes. CD 11/14.

▲ **KENTUCKY**—Commonwealth of Kentucky, Dpt. Hys., Frankfort. Bids opened 12/2.

Ky.—**Fischer Constr. Co.**, 10147 Springfield Pike, Cincinnati, O., LB **$1,239,353**, (8 bidders), c. conc. pavt. 3.201 mi. Covington-Lexington, SP I 75-7(14) 178, Boone Co.;

Ky.—**Kelly Contr. Co.**, 317 Wallace Ave., St. Matthews, Ky., LB **$1,699,333**, (10 bidders), c. conc. pavt. 6.253 mi. Louisville-Lexington. I 64-3 (4)31, Shelby Co.,

Ky.—**R. B. Tyler Co.**, 1446 Levering St., Louisville, Ky., LB **$1,134,864**, (10 bidders), c. conc. pavt. 4.32 mi. Lousiville-Lexington, I 64-3 (10)42, Shelby and Franklin Counties;

Ky.—**Northern Ky. Asphalt Co.**, 16 and Water Sts., Covington, Ky., LB **$105,609**, (2 bidders), b. conc. Class I. 0.343 mi. entrance road to Northern Center of University of Kentucky, SP 59-45 Kenton Co.;

Ky.—**Sloan Constr. Co.**, Hindman, Ky., LB **$151,167**, (7 bidders) traffic bound surf. 4.64 mi. Lovely-S. Williamson. S 635(2), Martin Co. CD 11/9.

### BUILDINGS—LB & CA

▲ **R. N. Bayliss**, Harbor Hills, Bradenton, Fla., CA **$2,000,000**, SHOPPING CENTER, Manatee Ave. and 51st St. W., BRADENTON, FLA. Owner, c/o Alfred T. Floyd, 433 Grand Central Ave., Tampa, Fla., archt., CD 11/23.

▲ **Allan M. Campbell Co.**, 3009 Edgewater Dr., Orlando, Fla., LB **$4,851,000**, (8 bidders), 6 story County OFFICE and 3 story JAIL CLEARWATER, FLA. Pinellas County, 305 Haven St., Clearwater, Fla. Bids Dec. 6. CD 11/4.

▲ **Vista, Inc.**, 3225 5th Ave., St. Petersburg, Fla., will not construct COLONIAL VILLAGE, 38 Ave. and 66 St. ST. PETERSBURG, FLA. **$2,000,000**, Project abandoned. CD 4/29.

▲ **Allen Bros. Constr. Co.**, 3742 Lamar Ave., Memphis, Tenn., CA **$1,500,000**, 7 story, 170,000 sq. ft. OFFICE and SHOP, 1542 Madison, MEMPHIS, TENN. Boyle Trust & Investment Co., 42 S. 2, Memphis, Tenn. Walk C. Jones Jr., 1215 Poplar Ave., Memphis, Tenn., archt. Allen & Hoshall, 65 McCall Place, Memphis, Tenn., mechanical engrs.

▲ **Mid-South Constr. Co.**, 79 Commerce St., Montgomery, Ala., LB **$1,995,000**, (11 bidders), 4 story, bsmnt. LIBRARY, AUBURN, ALA. Auburn University, Auburn, Ala. Bids Dec. 1, CD 11/2.

## MIDDLE WEST

### HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
December 20 Indiana
STREETS AND ROADS
December 20 Indiana

### BUILDINGS—BA

▲ **Ill., Chicago**—HOUSING—BA 1/5—Chicago Housing Authority, 608 S. Dearborn St., Zone 5, Proj. 2-34, low rise 384 unit Washington Park Homes, $4,600,000. Samuel Arthur Lichtman, 134 S. LaSalle St., Zone 3, and Mark D. Kalischer, 230 E. Ohio St., Zone 11, archts. CD 5/23.

▲† **Mich., Grand Rapids**—POST OFFICE—BA 1/13—U. S. Post Office Dpt., 12 and Pennsylvania Ave. N.W., Wash., D. C., post office. Over $1,000,000. CD 7/22/53.

▲† **Wis., Madison**—HOUSING—BA On Or About 1/17—Base Procurement Office, Bldg. 2505, Truax Field, 280 family Armed Services Housing, Truax Field, ENG-47-602-61-21, Plans deposit $125. CD 9/29/58.

### BUILDINGS—SLC

▲ **Ill., Chicago**—EDUCATIONAL CENTER—University of Chicago, 5801 S. Ellis Ave., soon lets contract 3 story, 18,000 sq. ft. continuing educational center, 60th and Kimbark Sts. $3,500,000. Edward D. Stone, 50 E. 64th St., New York, N. Y., archt. CD 2/5/59.

### HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—Dpt. Hys., State Depts. Bldg., Columbus, Zone 15, Bids opened 11/22,

O.—**Shelly & Sands, Inc.**, Thornville, O., LB **$1,171,927** est. $1,475,000, (11 bidders), Type T 35 on B 20, 6.203 mi. State Rte. 75-0.00, 26.57, Proj. 763, Muskingum and Perry Counties;

O.—**Vest & Bartell, Inc.**, 1953 Losantiville Ave., Cincinnati, O., LB. **$180,309**, est. $119,000, (2 bidders), grading 3.82 mi. State Rte. 4W-(4.21), (6.06), (7.81, Cities of Cincinnati and St. Bernard), Proj. 760, Hamilton Co.;

O.—**The Penker Constr. Co.**, 1030 Summer St., Cincinnati, O., LB **$4,672,107**, Alt. LB **$4,675,964**, (10 bidders), Type T 71 and structures 1.67 mi., U.S. Rte. 25-0.46, U.S. Rte. 50-20.43, I 75-1(42)00, I 71-1(18)00, U-1100 (8) City of Cincinnati, Proj. 764, Hamilton Co.;

O.—**Wander & Mason, Inc.**, 1028 Proprietors Rd., Worthington, O., LB **$239,949**, est. $284,600, (6 bidders), Type T 71, structures 0.552 mi., U.S. Rte. 50-19.51, F-FG-465(5) Proj. 755, Vinton Co. CD 11/9.

**OHIO**—State Hy. Dpt., State Depts. Bldg., Columbus, Zone 15,

cancelled bids to have been opened Nov. 22, Type T 35 and structure 0.212 mi., State Rte. 708, (2.10-2.19), Proj. 762, Logan Co. CD 11/9.

▲ **INDIANA**—State Hy. Comn., State House Annex, Indianapolis, Bids opened 12/6,

Ind.—**Vogel Constr. Co.**, 3760 E. St. Clair St., Indianapolis, Ind., LB **$1,571,918**, c. conc. pavement, Contract R 5177, Madison Co.;

Ind.—**Bituminous Materials Co., Inc.**, 3500 N. 33rd St., Terre Haute, Ind., LB **$360,290**, (2 bidders, c. conc. pavement, Contract R 5179, Vigo Co.;

Ind.—**Phend & Brown**, Milford, Ind. and **Gast Constr. Co.**, 216 S. Columbia St., Warsaw, Ind., LB **$718,579**, (9 bidders), c. conc. pavement, Contract R 5180, Wabash Co.

▲ **Ryan Constr. Co.**, 800 E. Michigan St., Evansville, Ind., CA **$1,761,391**, Schedule 1, 9 and 10, water transmission lines, filtration plant addn., standpipe fdn., EVANSVILLE, IND. City, City Hall, Evansville, Ind. Radar & Assocs., First National Bank Bldg., 100 Biscayne Blvd. S., Miami 32, Fla., engrs. Grand total $2,059,216. CD 11/16, under CA;
**Traylor Bros.**, Station B, Box 606, Evansville, Ind., CA **$205,980**, Schedule 2 and 8, Weinbach Ave., Pennsylvania St., Stringtown Reservoir, St. George Rd., 1st Ave. and Stringtown Rd. pumping station, (Evansville, Ind.);
**Graver Tank & Mfg. Co.**, Div. Union Tank Car Co., 4809 Tod Ave., East Chicago, Ind., CA **$91,845**, Schedule 11, standpipe constr. (Evansville, Ind.)

▲ **ILLINOIS**—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldgs., Springfield,

**Peter Kiewit Sons**, 1024 Omaha National Bank Bldg., Omaha, Neb., CA **$2,048,899**, paving 2.9 mi. FAI 280, paved ramps, Rock Island Co. Bids Nov. 18. CD 11/23, under LB.

▲ **MICHIGAN**—State Hy. Dpt., 732 Mason Bldg., Lansing, Zone 26,

Mich.—**Pierson Contg. Co.**, 200 Eddy Bldg., Saginaw, Mich., CA **$982,137**, 4.15 mi. dual b. conc. US 27 freeway from Hatton Rd. north to M-61 between Clare and Harrison, Clare Co.;

Mich.—**Holloway Constr. Co.**, 29350 Joy Rd., Livonia, Mich., CA **$2,134,210**, dual aggreg. base course 7.655 mi. and four bridges on I-75 from Otsego-Crawford County line north to Charles Brink Rd., 5 mi. south of Gaylord, Otsego Co.;

Mich.—**C. E. Utterbeck**, 1101 N. Franklin St., Mount Pleasant, Mich., CA **$702,325**, reconstr. grading, drainage structures and asphalt surf. 14.31 mi. M-30 from Midland-Saginaw County line north to Sanford, Midland Co. Bids Nov. 16, awarded Dec. 6. Grand total $3,818,672. CD 11/23, under LB.

### BUILDINGS—LB & CA

▲ **Suburban Star Estates**, c/o Bill Bees, S. Abbe Rd., Elyria, O., Owner Builds, **$4,000,000**, $1,900,000 first year (3 yr. program), 270 HOMES, intersection of Rte. 303 and Wheeler Rd., LA GRANGE, O.

▲† **A. L. Jackson Co.**, 300 W. Washington St., Chicago, Ill., CA **$5,983,269**, est. $5,500,000, demolition and foundations, three basements, for FEDERAL BLDG., Dearborn, Adams and Jackson Sts., CHICAGO, ILL. General Services Admin., 219 S. Clark St., Chicago 4, Ill. Bids Nov. 17. CD 11/21, under LB.

▲ **Edward Gray Co.**, 12233 S. Ave. O, Chicago, Ill., CA **$1,499,600**, general contract UNIVERSITY CENTER, Northern Teachers College, DE KALB, ILL. State Teachers College Bd., State Office Bldg., Springfield, Ill. Bids Nov. 10, awarded Dec. 5. CD 12/1, under LB.

▲ **Felmley-Dickerson Co.**, 1008 N. Goodwin Ave., Urbana, Ill., CA **$2,855,000**, general contract COLLEGE CENTER, Illinois Union bldg. addn., URBANA, ILL. University of Illinois, 256 Admin. Bldg., Urbana, Ill. Bids Oct. 11, awarded Nov. 16. CD 11/2, under LB.
**Bellis Miller, Inc.**, 13 Main St., Champaign, Ill., CA **$798,777**, heating contract, Illinois Union bldg. addn. (Urbana, Ill.)

▲ **O. E. Madsen & Son**, Sexton Bldg., Minneapolis, Minn., LB **$1,428,800**, GYMNASIUM MADISON, WIS. University of Wisconsin, Madison, Wis. Bids Dec. 1. CD 11/1.

▲ **S. E. Redstone Builders**, 10811 Puritan Ave., Detroit, Mich., CA Est. **$1,500,000**, 3 story glass, brick OFFICE, McNichols and Meyers Sts., DETROIT, MICH. Irwin A. Klar Syndicate, 717 Penobscot Bldg., Detroit 26, Mich. Louis G. Redstone, 10811 Puritan Ave., Detroit 38, Mich., archt.

## MISSISSIPPI TO ROCKIES

### HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
December 20 Colorado December 22 Kansas
December 30 North Dakota

▲† Missouri and Illinois—BA 12/20—U. S. Eng., 420 Locust St., St. Louis 2, Mo., timber piling clump dikes and stone fill dikes, Mississippi River in Cape Girardeau, Scott and Mississippi Counties, Mo. and Union and Alexander Counties, Ill., CIVENG-23-065-61-37. $1,500,000. Extended date. CD 11/14.

### BUILDINGS—BA

▲ **Colo., Greeley**—LABORATORY SCHOOL—BA 12/22—State Planning Comn., State Capitol, Denver, Colorado State College, Campus, 2 story, bsmnt., 120,000 sq. ft. laboratory school, $1,500,000. R. F. Linstedt, 625 W. 14th Ave., Denver, archts. Sol Flax, 640 Sherman, Denver, elec. engr. Johnson & Voiland, 6001 W. 16th Ave., Denver, struc. engrs. Riley Engineering Corp., 1280 Kalamath, Denver, mech. engrs. CD 8/25.

▲ **Mo., Mexico**—HOUSING—BA 12/29—City Housing Auth., City Hall, Sites I, II and III, Housing Proj. No. Mo. 10-1, 160 units, concrete parking areas, walks, etc. $2,214,745. Plans deposit $50. Butler & Assocs., Inc., 306 E. Broadway, Columbia, archt. CD 6/29/59.

▲ **Tex., Dallas**—SCHOOL—BA 1/10—Dallas Ind. School Dist., 3700 Ross Ave., Thomas C. Marsh Junior High School, Forest St. and Cox Lane. $1,500,000. Goodwin & Cavitt, Vaughn Bldg., archts. CD 6/21.

### HEAVY CONSTRUCTION—LB & CA

▲ **OKLAHOMA**—State Hy. Dpt., Capitol 5, Oklahoma City,

Okla.—**Anchor Constr. Co.**, Mid States Bldg., Tulsa 2, Okla., CA **$1,316,538**, est. $1,399,731, sand asph. base b. conc. surf. 6.751 mi. on four lane I 40, Caddo Co.;

Okla.—**Park Ward Co.**, Commerce Exchange Bldg., Oklahoma City 2, Okla., CA **$574,771**, est. $470,519, stab. asph. base, double bit. surf. 7.966 mi. US 54, Texas Co. Bids Nov. 22, awarded Dec. 5. CD 11/28, under LB.

▲ **Tulsa Rig, Reel & Mfg. Co.**, Philtower Bldg., Tulsa 2, Okla., LB **$1,698,000**, (5 bidders), 122,000 sq. ft. MEMORIAL HIGH SCHOOL, TULSA, OKLA. Bd. Educ., 410 S. Cincinnati St., Tulsa, Okla. Bids Nov. 29. CD 10/20.

▲ **J. L. Philips Building Co.**, 6158 Willers Way, Houston, Tex., Owner Builds, **$6,250,000**, 175 DWELLINGS, Briargrove Park, HOUSTON, TEX.

▲ **Fretz Constr. Co.**, 2000 Eastwood St., Houston, Tex., CA **$7,000,000**, 19 story, bsmnt., masonry, concrete solar glass and marble OFFICE, double level parking. HOUSTON, TEX. Fannin State Bank, 1020 Holcombe Blvd., Houston, Tex. CD 8/22

▲ **Northwestern Engineering Co.**, 60001 Dexter St., Denver, Colo., LB **$1,818,000**, site preparation for runway, Stapleton Airfield, Proj. No. 9-05-010-23, Unit No. 2, DENVER, COLO. City & County of Denver, City & County Bldg., Denver, Colo. Bids Nov. 29. CD 11/9.

### BUILDINGS—LB & CA

▲ **G. W. Madsen Constr. Co.**, 2823 Lyndale Ave. S., Minneapolis, Minn., CA **$1,731,600**, (6 bidders), general contract JUNIOR HIGH SCHOOL, N. 55 St. and Zealand Ave., New Hope, ROBBINSDALE, MINN.

Bd. Educ. Independent School Dist. No. 281, High School Bldg., Robbinsdale, Minn. Bids Nov. 30. Grand total $3,013,855. CD 11/9.

**C. H. Peterson Constr. Co.**, 4020 Minnetonka Blvd., Minneaplois, Minn., CA **$585,100**, (10 bidders), ELEMENTARY SCHOOL, N. 62 St. and Zealand Ave., New Hope (Robbinsdale, Minn.);

**A. Newman Htg. & Plg. Co.**, 1608 Como Ave., St. Paul, Minn., CA **$697,155**, combined bid on plumbing, heating, ventilating temporary control for Junior High School and Elementary School, New Hope (Robbinsdale, Minn.).

▲ **Jenkins Constr. Co.**, 19 Briarbrook Trail, Des Peres 22, Mo., Owner Builds, **$1,500,000**, 70 split-level, brick, frame, etc. RESIDENCES, north of Manchester Rd. between Ballas and Bopp Rds., DES PERES (ST. LOUIS 22 P.O.), MO.

▲ **MacDonald Constr. Co.**, 1310 S. Grand Blvd., St. Louis 4, Mo., CA 1 story, 180,000 sq. ft., brick, steel, AUTOMOTIVE PARTS DEPOT addn., Brown Rd. and Lindbergh Blvd., HAZELWOOD, MO. General Motors Corp., Chevrolet Motor Div., 3044 W. Grand Blvd., Detroit, Mich. Bids Nov. 29. CD 11/25.

**Stupp Bros. Bridge & Iron Co.**, 3800 Weber Rd., St. Louis 25, Mo., CA structural steel for Automotive Parts Depot addn. (Hazelwood, Mo.).

▲ **Auburn Corp.**, c/o Sidney L. Stone, 709 Chestnut St., St. Louis 1, Mo., Owner Builds, **$4,500,000**, 2 story 208 air conditioned living unit APARTMENT, incl. off-street parking, etc. Spring Ave. between Delot and Itaska Sts. and COMMUNITY STORES, Spring and Delot, playgrounds, etc. ST LOUIS, MO.

▲ **Hampshire Building Co.**, c/o Chas. H. Horn Realty Co., 4627 Hampton Ave., St. Louis 9, Mo., Owner Builds, **$1,500,000**, (2-3 Year Program), First Year $500,000, 23 one story APARTMENTS, Spring Ave. between Delot and Itaska Sts., ST. LOUIS, MO.

▲ **Dickmann-Pickens-Bond Constr. Co.**, Gazette Bldg., Little Rock, Ark., CA **$2,475,246**, FACTORY, OSCEOLA, ARK. Cty, City Hall, Osceola, Ark. American Greeting Card Corp., Cleveland, O. lessee, Bids Nov. 3, awarded Nov. 28. CD 11/7, under IB.

▲ **Manhattan Constr. Co.**, 1804 Classen St., Oklahoma City 6, Okla., CA **$6,593,975**, (11 bidders), two STATE OFFICE BLDGS., incl. connecting tunnels, Lincoln Blvd., OKLAHOMA CITY, OKLA. Capitol Improvement Auth., Capitol Bldg., Oklahoma City 5; Okla. Bids Dec. 1. CD 11/9.

▲ **B. L. McGee Constr. Co.**, Box 782, Austin, Tex., LB **$2,479,000**, general contract LIBRARY and ACADEMIC CENTER, AUSTIN, TEX. University of Texas, Main Adminstration Bldg., Austin, Tex., Bids Dec. 1, CD 11/16;

**O. H. Cummins Electric Co.**, 2706 South Lamar, Austin, Tex., LB **$587,885**, electrical work; (Austin, Tex.);

**J. M. Boyer**, Box 4308, Austin, Tex., LB **$494,349**, heating, ventilating and air conditioning work, (Austin, Tex.);

▲ **Industrial Lands, Inc.**, c/o Frank Allison & Associates, archts., 555 17th St., Beaumont, Tex., Owner Builds, **$5,250,000**, Phase 1, 400 DWELLINGS, Fannett, 2 mi. north of BEAUMONT, TEX.

▲ **Manhattan Constr. Co. of Texas**, 1811 Crawford St., Houston, Tex., CA **$4,000,000**, 9 story, bsmnt., 225 room, concrete HOTEL, Main, Fannin, Commerce Sts. and Franklin Ave., HOUSTON, TEX. Continental Houston Hotel, Dougles W. McGregor, Gulf Bldg., Trustee, Houston, Tex. Bill Hirsch, 8441 Melrose St., Los Angeles, Calif., archt. CD 8/5.

▲ **Olson Brothers Constr. Co.**, 2472 Bolsover St., Houston, Tex., Owner Builds **$2,000,000**, 7 story, brick, masonry OFFICE, Kirby Drive and Norfolk, HOUSTON, TEX. Flynn & Flynn, 2472 Bolsover St., Houston, Tex., archts. Walter P. Moore, 2 Pinedale St. Houston Tex. engr. CD 12/6.

▲ **Alpha of Texas, Inc.**, 1200 N. Alma Rd., Dallas, Tex., CA approx. **$1,740,000**, MANUFACTURING PLANT, RICHARDSON, TEX. Collins Radio Co., 1200 N. Alma Rd., Dallas, Tex. CD 11/30.

▲ **F. L. Scott & Son**, 1212 W. Lullwood St., San Antonio, Tex., CA **$2,100,000**, 4 upper floors to existing 10 story OFFICE and DIAL, site Auditorium Circle, SAN ANTONIO, TEX. Southwestern Bell Telephone Co., Auditorium Circle, San Antonio, Tex. CD 10/7.

▲ **Morris Brothers Constr. Co.**, 3108 Quari, Aurora, Colo., Owner Builds, Approx. **$3,000,000**, 250 one story, bsmnt. RESIDENCES, AURORA, COLO.

## FAR WEST

### HEAVY CONSTRUCTION—BA

**STATE HIGHWAY LETTINGS**
**BRIDGES**
**December 29 Washington**
**STREETS AND ROADS**
**December 22 Nevada December 29 Washington**
**January 4, 5 California**

### BUILDINGS—BA

▲ **Calif., San Diego**—OFFICE—BA 1/11—Irvin J. Kahn, 920 Bank of America Bldg., Zone 1 (selected list bidders), 24 story, 176,000 sq. ft., rein.-con. Kahn office, First and "C" Sts. $6,500,000. Palmer & Krisel, 3602 Midway Dr., Zone 10, archts. CD 6/2.

### HEAVY CONSTRUCTION—LB & CA

▲ **S. S. Mullen, Inc.**, 220 River St., Seattle, Wash., LB Alt. A **$2,687,813**, (4 bidders), 14,003 ft. 115 KV transmission line crossing Turnagain Arm from Cooper Lake Hydro. Proj., ALASKA. Chugach Electric Assn., 8 and Gambell Sts., Anchorage, Alaska. Bids Dec. 6. (Delayed bid will be considered). CD 12/2;

**Gustav Hirsch Organization**, Post Rd., Anchorage, Alaska, LB Alt. B **$1,408,408**, 38 mi. wood pile around Turnagain Arm from Cooper Lake Hydro. Proj. (Alaska).

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento, Bids opened 12/7,

**Ball & Simpson**, 685 Delaware St., Berkeley, Calif., LB **$2,776,245**, (5 bidders), grading, paving to constr. 5 mi. four lane freeway US Hy. 101 between South of Windsor Creek and Healdsburg, Sonoma Co. CD 11/2.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles,

**Darkenwald Constr. Co., Inc. and Morrison-Knudsen Co., Inc.**, 411 West 5 St., Los Angeles, Calif., CA **$7,168,660**, grading 10 mi. future freeway route Sierra Hy. (U.S. Hy. 6) between San Canyon and Escondido Canyon Rds. east of Solamint, Los Angeles Co. Bids Nov. 3. CD 11/9, under LB.

▲ **CALIFORNIA**—State Div. Hys., 120 South Spring St., Los Angeles, Bids opened 12/1,

**Fredrickson & Watson Constr. Co. and Jack L. Adams Constr. Co.**, 873 81 Ave., Oakland, Calif., LB **$4,008,086**, (7 bidders), grading, paving to constr. 1.9 mi. 8 lane freeway on San Diego Freeway between 0.4 mi. east of Alameda St. and Carson St., Los Angeles, Los Angeles Co. CD 10/26.

▲ **Zarubica Co.**, 8550 Tujunga Ave., Sun Valley, Calif., CA **$2,069,381**, Westwood Relief Sewers, Unit 1, LOS ANGELES, CALIF. City, City Hall, Los Angeles, Calif. Daniel, Mann, Johnson & Mendenhall, 3325 Wilshire Blvd., Los Angeles, Calif., and Koebig & Koebig, 3242 W. 8 St., Los Angeles, Calif., engrs. Bids Oct. 26, awarded Nov. 30. CD 11/1, under LB.

### BUILDINGS—LB & CA

▲ **Patti-MacDonald & Mibur**, 1916 Eastlake Ave., Seattle, Wash., LB **$4,856,878**, (13 bidders), CITY HALL, SEATTLE, WASH. Bd. P. Wks., County-City Bldg., Seattle, Wash. Bids Dec. 7. CD 11/10.

▲ **Guy Hall**, Box 1086, Bakersfield, Calif., CA **$3,237,100**, MUNICIPAL AUDITORIUM, BAKERSFIELD, CALIF. City, City Hall, Bakersfield, Calif. Wright, Metcalf & Parsons, 2323 E St., Bakersfield, Calif., archts. Bids Nov. 14, awarded Nov. 30. CD 11/18, under LB.

▲ **J. G. Watts Constr. Co.**, 672 S. Lafayette Park Pl., Los Angeles, Calif., CA **$5,614,520**, 5 story, 292,000 sq. ft., 5,000 STUDENT CLASSROOM BLDG. NO. 1, Los Angeles State College, W.O. 4304GC-26, LOS ANGELES, CALIF. State Div. Architecture, 1100 S. Grand Ave., Los Angeles, Calif. Bids No. 23, awarded Nov. 30. CD 11/28, under LB.

▲ **Donald M. Drake**, 1600 N.W. Savier St., Portland, Ore., CA **$2,688,000**, (6 bidders), 135,000 sq. ft. rein.-con., steel COURTHOUSE, MARYSVILLE, CALIF. Yuba Co., Courthouse, Marysville, Calif. Bids Nov. 30, awarded Nov. 30. CD 11/15.

▲ **Twaits-Wittenberg Co.**, 507 S. Bixel St., Los Angeles, Calif., CA Est. **$15,000,000**, 8 story HEADQUARTERS BLDG., six 2 story RESEARCH BLDGS., 5 story ENGINEERING BLDG., LIBRARY-AUDITORIUM and SERVICE BLDG., REDONDO BEACH, CALIF. Space Technology Laboratories, Inc. (sub. Thompson, Ramo, Wooldridge, Inc.), 5740 Arbor Vitae St., Los Angeles, Calif. Albert C. Martin & Assoc., 333 S. Beaudry St., Los Angeles, Calif., archts.

▲ **G. L. Cory, Inc.**, 7950 Othello St., San Diego, Calif., CA **$2,283,283**, 4 story, bsmnt., 138,000 sq. ft. LIFE SCIENCE and PSYCHOLOGY BLDG. addn., San Diego State College, W.O. 4304GC-44, SAN DIEGO, CALIF. State Div. Architecture, 1120 S. Grand Ave., Los Angeles, Calif. Bids Nov. 30. CD 12/5, under LB.

▲ **Haas-Hayne Corp.**, 8913 Olympic Blvd., Beverly Hills, Calif., LB **$2,098,000** MANUFACTURING PLANT, 15825 Roxford St., SAN FERNANDO, CALIF. Bendix Corp., c/o Welton Becket & Assocs., archts., 10,000 Santa Monica Blvd., Los Angeles, Calif. Bids Nov. 18, CD 11/10.

▲ **Haas & Haynie**, 244 Pine St., San Francisco, Calif., Owner Builds, **$6,000,000**, 17 story APARTMENT, Nob Hill, SAN FRANCISCO, CALIF.

▲ **Berg-Abrams**, 5817 Sunset Blvd., West Hollywood, Calif., Owner Builds, **$2,300,000**, APARTMENT, 8404 Sunset Blvd., Tract 1501, WEST HOLLYWOOD, CALIF. Maxwell Starkman, 1100 S. LaBrea Ave., Los Angeles, Calif., archt.

▲ **The Tradewind Corp.**, 425 Ena Rd., Honolulu, Hawaii, Owner Builds, **$5,000,000**, (5 Year Program) Second Unit, 7 Tradewind APARTMENTS, HONOLULU, HAWAII. Edwin L. Bauer, 1521 S. King St., Honolulu, Hawaii, archt. CD 3/3.

## CANADA

### HEAVY CONSTRUCTION—BA

**STATE HIGHWAY LETTINGS**
**STREETS AND ROADS**
**January 4, 11 Ontario**

▲ **B. C., Vancouver**—BA 1/10—Greater Vancouver Sewerage & Drainage Dist., 2294 W. 10th St., Iona Island sewage treatment plant. Extended date. CD 9/22.

### HEAVY CONSTRUCTION—SLC

▲ **N. S., Halifax**—Halifax Shopping Center, Ltd. (Webb & Knapp (Canada) Ltd., 1010 St. Catherine St. W., Montreal, Que., soon lets contract, site preparation for shopping centre. T. Eaton Co., Ltd., Yonge St., Toronto, Ont., lessee. John Graham Consultants, 2 Carlton St., Toronto, Ont., archts. CD 8/29, under Commercial Buildings.

### HEAVY CONSTRUCTION—LB & CA

▲ **Brown & Root Ltd.**, 5460 Patricia Ave., Montreal, Que., CA Total est. **$5,000,000**, design and construct foundation contract for mfg. PLANT, Beach Rd. and Parkdale Ave., HAMILTON, ONT. Columbian Carbon (Canada) Ltd., 7147 Park Ave., Montreal, Que. W. L. Carbrey, Box 59, Station C, Hamilton, proj. engr. CD 9/16.

▲ **Bennett-Pratt Ltd.**, 5 Maple Leaf Dr., Weston, Ont., CA Est. **$1,700,000**, 4 story, 46 x 205 ft., steel frame HOSPITAL addn., WESTON, ONT. Humber Memorial Hospital, 200 Church St., Weston, Ont. Bids Nov. 24. CD 11/18.

### BUILDINGS—LB & CA

▲ **Mann Constr. Co., Ltd.**, 543 Granville St., Vancouver, B. C., CA **$2,000,000**, 13 story, 234 suite APARTMENT, Burrard St. bridge, VANCOUVER, B. C. T. J. Campbell & Assocs., 543 Granville St., Vancouver, B. C. Peter Kaffka, 1105 W. Georgia St., Vancouver, B. C., archts. Awarded Nov. 3.

▲ **Steel Structures (Western) Ltd.**, Harrow and Sparling Sts., Winnipeg, Man., CA **$3,000,000**, 50,000 sq. ft. particle board PLANT, SPRAGUE, MAN. Columbia Hardboard Co., Skinner Bldg., Seattle, Wash., U.S.A. Awarded Nov. 30. CD 11/9.

▲ **A. E. Rule Ltd.**, P. O. Box 504, Weston, Ont., CA Est. **$2,000,000**, 1 story, 200 x 240 ft. American face brick, steel CIGARETTE FACTORY, poured concrete fdn., BRAMPTON, ONT. Benson & Hedges of Canada Ltd., 1078 Pape Ave., Toronto, Ont. Bids Nov. 29. CD 11/25.

▲ **Hurley-Gregoris Co., Ltd.**, 321 Bloor St. E., Toronto, Ont., LB **$2,012,000**, 4 story, steel, concrete, masonry HOME FOR AGED, Lawrence Ave. and Brimley Rd., TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont. Mathers & Haldenby, 10 St. Mary St., Toronto, Ont., archts. C. D. Carruthers & Wallace, Consultants Ltd., 92 Yorkville Ave., Toronto, Ont., engrs. Bids Nov. 29. CD 11/21.

## PUERTO RICO

### BUILDINGS—LB & CA

▲ **Rene Aponte Caratini**, First Federal Bank Bldg. Rio Piedras, Puerto Rico, CA Est. **$2,000,000**, 1st Stage, 400 HOMES, Greenville City Development, CAROLINA, PUERTO RICO. Gonzalez & Gonzalez, Box 8795, Santurce, Puerto Rico, archts.

▲ **IBEC Housing Corp.**, Box 2745, Rio Piedras, Puerto Rico, CA Est. **$2,500,000**, 18-tenant SHOPPING Center, PONCE, PUERTO RICO. IBEC Realty, Box 2983, San Juan, Puerto Rico. Luccarelli Assocs. Box 2983, San Juan, Puerto Rico, archts.

## AMERICANS ABROAD

### HEAVY CONSTRUCTION—BA

▲ **West Pakistan**—BA 1/6—Water & Power Development Auth., The Pipals, West Mall, Lahore or Kuljiam Corp., 1200 North Broad St., Phila. 21, Pa., U.S.A., consult. engrs. equipment for 15,000 kw. Quetta Thermal Power Station at Sheikh Mauda near Quetta incl. two turbo generator units; two 100,000 lbs. per hr. steam generating units, auxiliary equipment (Phase 1). Extended date. CD 11/10.

## FOREIGN

### HEAVY CONSTRUCTION—BA

▲ **India, Vizagapatam**—ORE and CARGO BERTHS, etc.—BA 1/5—India Ministry of Transportation & Communications, Office Supervising Engineer, Vizagapatam, ore and cargo berths, lighterage wharf, State Andhra Pradesh. $3,465,000. Plans deposit $39.

▲ **LIBYA**—Bids Asked—Director of Federal Roads, Ministry of Communications, Tripoli, completing Fezzan Road, $10,000,000-$12,000,000.

# PROPOSED PROJECTS

## WATER SUPPLY

▲ **Calif., Los Angeles**—Metropolitan Water Dist. of Southern Calif., 306 W. 3 St., lower feeder water treatment plant, Yorba Linda. **$14,000,000.** James M. Montgomery, 535 E. Walnut St., Pasadena, consult. engr.

▲ **Ont., Hamilton**—City, City Hall, water intake system. $3,000,000.

## SEWERS, WASTE DISPOSAL

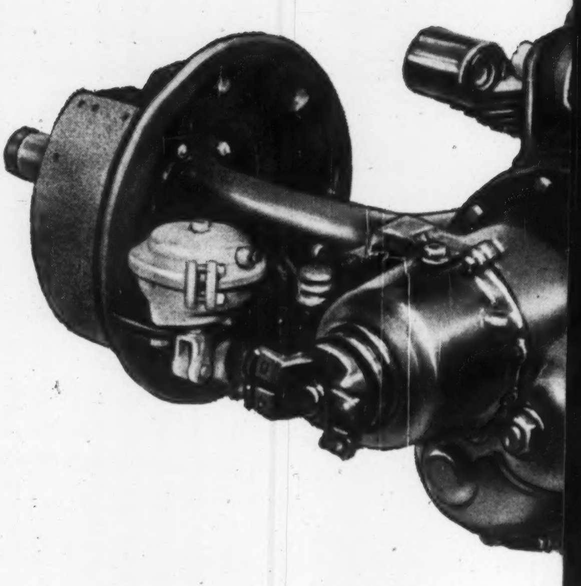
▲ **Ky., Bowling Green**—City of Bowling Green, sewer extensions and treatment plant. **$4,346,000.** To go ahead 1962.

▲ **O., Massillon**—City, City Hall, sewerage system expansion. **$2,000,000.** Floyd G. Browne & Assocs., 125 W. Church St., Marion, consult. engrs.

▲ **O., Strongsville**—City, City Hall, voted bonds Nov. 8, sewers. **$2,630,000.** (Correction—status). CD 11/14.

(Continued on p. 70)

Hours of twist tests and road tests proved the quality and endurance of new IH bogies.



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# NEW TANDEM DESIGNED AND

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**Lightweight, simplified power divider** – Through-drive hypoid design transmits equal driving force from triple helical gears to forward axle and then through drive shaft to rear axle. Both drive pinions rotate in a 1-to-1 ratio.

**Induction-hardened axle shafts**–Induction heating provides a hard, deep outer case and maintains a tough inner core for up to 10 times more resistance to shock loads. Axle shafts will not "fan-out"–they cut the possibility of fragments in the differential or axle housing.

**Rugged, lightweight, through-drive design**– Handles bigger payloads with less wear and tear. Provides greater strength and increased torque capacity. You work better both on and off highway, at high or low speeds.

**Clean-cut appearance** – Differential carriers are centered, all drive parts are kept within diameter of housing banjo. Brake diaphragms are in protected areas. Shafts and other parts interchangeable between axles.

**Now three IH bogies available** – Weight ratings of 30,000, 34,000 and 38,000 lb. capacities. Available in INTERNATIONAL Trucks of conventional, compact, and cab-over-engine designs from 37,000 to 53,000 lbs. GVW, up to 127,000 lbs. GCW, with gasoline, diesel or LPG power.

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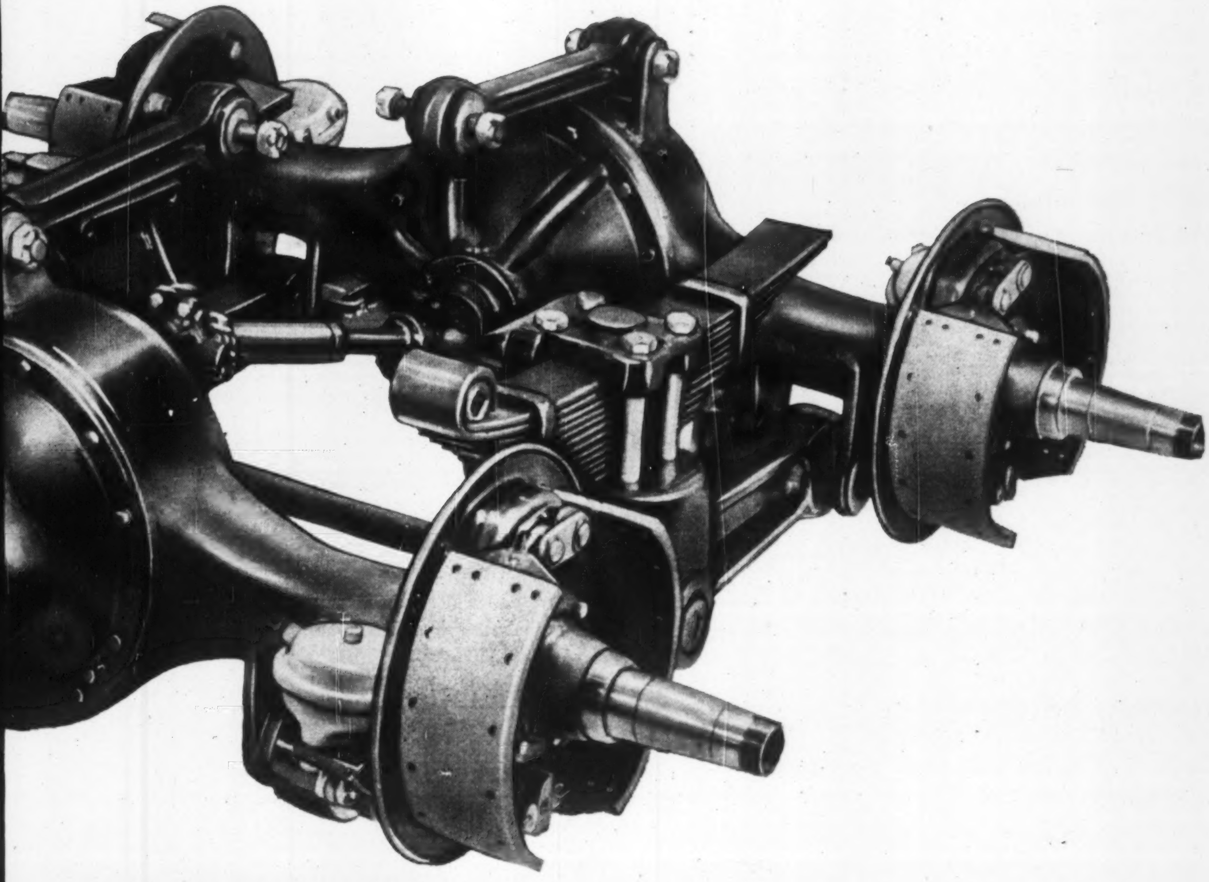

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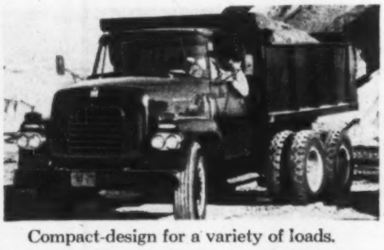

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(Continued from p. 67)

## BRIDGES

▲ **Ill., Chicago**—Bd. Comrs. Cook Co., County Bldg., Zone 2, grade separation, E. Lake Ave. under Milwaukee R.R. and Lehigh Ave., Glenview. **$3,000,000.** Bids early 1961.

▲ **WASHINGTON**—State Hy. Comn., Transportations Bldg., Columbia,

**King Co.**—East Side approaches to floating bridge over Lake Washington. **$2,400,000.**

## STREETS AND ROADS

▲ **ALASKA**—State of Alaska, State Dpt., Juneau, voted **$23,000,000** bonds Nov. 8, highways and ferry way. CD 9/20

▲ **Calif., San Jose**—Bd. Supervs. Santa Clara Co., Civic Center, 1 and Rosa Sts., **$70,000,000** bond election Mar. 14, roads and expressways.

▲ **Conn., Waterford**—Town, Town Hall, rebuild 28 mi. roads, Bloomingdale, Butlertown, Braman, Gardiner's Wood, Ellen Ward, Old Colchester and Niantic River Roads, Vauxhall St. Ext., etc. **$3,920,000.**

▲ **Mo., Webster Groves (St. Louis 19 P.O.)**—City, City Hall, repaving, etc., various arterial streets and avenues. **$2,000,000-$2,500,000.** Bids 1961 and 1962.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg,

**Columbia Co.**—5.4 mi. sect. Keystone Shortway between T.R. 42 and T.R. 11, final design. **$4,000,000.** Buchart Engineering Co., York, consult. engr.

**Columbia Co.**—10.5 mi. sect. Keystone Shortway between T.R. 54 and T.R. 42, Columbia Co., final design. **$8,000,000.** Michael Baker, Inc., Rochester, consult. engr.

**Luzerne Co.**—6 mi. sect. Keystone Shortway between T.R. 93 and T.R. 309, final design. **$5,000,000.** Gannett, Fleming, Corddry and Carpenter, Inc., 600 N. 2nd St., Harrisburg, consult. engrs. CD 7/23/58.

**Luzerne Co.**—14 mi. sect. Keystone Shortway between Susquehanna River Bridge and T.R. 93 final design. **$10,000,000.** Michael Baker, Jr., Rochester, consult. engrs.

## EARTHWORK, WATERWAYS

▲† **Alabama**—Tennessee Valley Authority, New Sprankles Bldg., Knoxville, Tenn., locks for Wheeler Dam. **$16,000,000** ($4,075,000 appropriated). CD 1/28/59.

## UNCLASSIFIED

▲ **D. C., Wash.**—SEAQUARIUM BLDG.—Fish & Wildlife Service, Dpt. Interior, C St. between 18th and 19th Sts. N.W., Wash., D. C., seaquarium bldg., Haines Point, **$3,000,000.** No appropriation.

## PUBLIC BUILDINGS

▲ **Alaska, Anchorage**—STATE OFFICE—State of Alaska, State Dpt., Juneau, voted **$3,000,000** bonds Nov. 8, state office. CD 9/20.

▲ **Alaska, Fairbanks**—STATE OFFICE—State of Alaska, State Dpt., Juneau, voted **$3,000,000** bonds Nov. 8, state office. CD 9/20.

▲ **Calif., Berkeley**—RENOVATING ELECTRON VOLT BEVATRON, etc.—Regents University of California, Admin. Bldg., renovating 6.2 billion electron volt Bevatron, incl. constr. thicker shielding walls. **$9,600,000.**

▲ **Calif., Los Angeles**—SCHOOLS—Bd. Educ., 1425 S. San Pedro St., voted **$150,000,000** bonds Nov. 8, schools. CD 4/8.

▲ **Calif., Oakland**—WELFARE—Alameda County, Courthouse, plans by Reynolds & Chamberlain, 3833 Piedmont Ave., 5 story, 98,000 sq. ft. rein.-con. and frame welfare bldg. **$2,500,000.**

▲ **Colo., Denver**—HOSPITAL—City & County of Denver, City & County Bldg., two circular, 5 story Denver General Hospital wing addns., 250 beds, **$7,000,000,** Reynolds, Ward & Carey, Mile High Center Bldg., consult. engrs. CD 3/14/57.

▲† **D. C. Wash.**—OFFICE—General Services Admin., 19th and F Sts., NW, Federal Office Bldg. No. 5, 10th St. Mall S.W. **$36,000,000.** No appropriation.

▲ **D. C., Wash.**—PHYSICAL EDUCATION—General Services Admin., P. Bldgs. Service, Room 7122, Regional Office Bldg., 7th and D Sts. SW. Plans by Justement, Elam, Callmer & Kidd, 2011 K St. N.W., physical education bldg. for Howard University. **$3,800,000.** CD 4/5/55.

▲ **D. C., Wash.**—APARTMENTS—National Capital Housing Authority, 1729 New York Ave., N. W., plans by Deigert & Yerkes, 3205 N St. N.W., Proj. 1-36; 60 unit apartment project, Carroll Apartments, N St. S.E., between 4th and 5th Sts., **$600,000;** Proj. 1-36 174 unit apartment project, Kentucky Courts, Kentucky Ave., 13th and 14th Sts., D St. and South Carolina Ave. SE, **$1,740,000;** plans by Esten & Cabaniss & Assoc., 8055 13th St., Silver Spring, Md., Proj. 1-36 230 units Woodland Terrace apartment project, Bruce, Ainger, Reynolds, Langston Places S. E. near 22nd St., vicinity of Alabama Ave., **$2,300,000;** plans by Satterlee & Smith, 3 Dupont Circle N. W., Proj. 1-37, 250 unit Garfield Terrace apartment project, Florida Ave. and Sherman Ave., N. W., **$2,500,000;** plans by Brown, Chapman, Miller & Wright, 1640 Wisconsin Ave. N. W., Proj. 1-38, 230 unit Eastgate, Gardens apartment project, Fitch St., Benning Rd., F, G and 51st Sts. S. E.

▲ **Fla., St., Catherine**—PRISON—Bd. Comrs. State Institutions, Tallahassee, plans by Reynolds, Smith & Hills, P. O. Box 4817, Jacksonville, prison. **$3,000,000,** no appropriation. CD 6/10.

▲ **Hawaii, Honolulu**—WAR MEMORIAL AUDITORIUM—City and Honolulu County, Punchbowl and King Sts., plans by Adrian Wilson, 816 W. Fifth St., Los Angeles 17, Calif., war memorial auditorium. **$5,000,000.** CD 2/10.

▲ **Ill., Wheaton**—HOME—DuPage Co., 201 Reber St., defeated bonds Nov. 8, county convalescent home, **$5,000,000.** CD 5/2.

▲ **Minn., North St. Paul**—SCHOOLS—Bd. Educ. Independent School Dist. No. 622, voted $3,850,000 bonds Nov. 22, Junior High School **$1,750,000,** grade school **$500,000.** CD 11/1.

▲† **Nev., Reno**—OFFICE—General Services Admin., 19th and F Sts. N.W., Wash., D. C., plans by Lockard, Cassazza & Parsons & Assocs., 232 W. 1st St., federal office. **$4,403,000.**

▲ **N. J., Emerson**—SCHOOL—Bd. Educ., Boro Emerson, Linewood Ave., referendum Jan. 17, Junior Senior High School. **$2,300,000.** Knappe & Johnson, Underhill Rd., Scarsdale, N. Y., archts. CD 7/5.

▲ **N. J., Hackensack**—SCHOOL RENOVATION—Bd. Educ., 355 State St., plans by Charles S. Cleveland, 214 Main St., renovation State Street School to Junior-High School. **$2,500,000.** Melvin Gelber, 31 Mercer St., mechanical engr. Schwartz & Senes, 40 Grand Ave., Englewood, structural engrs. Bids by Summer 1961. CD 11/7.

▲ **N. Y., Liberty**—SCHOOL—Central School Bd., voted referendum Nov. 15, 1 and 2 story Junior-Senior High School, Buckley St. **$2,537,810.**

▲ **N. C., Wilson**—HOSPITAL—Bd. Comrs. Wilson Co., Courthouse, voted bonds Nov. 8, 250 bed hospital addn., 100 bed school of nursing, **$5,125,000.** CD 10/18.

▲† **N. D., Fargo**—RESEARCH LABORATORY, etc.—General Services Admin., General Services Bldg., F between 18th and 19th Sts. N.W., Wash., D. C., plans by Harold E. Bechtel, 711 2nd Ave. N., 46,000 sq. ft. agricultural research laboratory, office and greenhouse. **$2,000,000.** Bids in January.

▲ **O., Dayton**—COURTHOUSE—Bd. Comrs. Montgomery Co., Courthouse, 200,000 sq. ft. courthouse. **$5,000,000.**

▲ **Pa., Mayfield**—SCHOOL—Upper Valley Jt. School Dist., Mayfield, secondary school, (Proj. 970). **$2,097,000.**

▲ **R. I., Warwick**—SCHOOL—City Warwick, School Bldg. Comn., School Admin., Bldg. 1849, Warwick Ave., voted bonds Nov. 8, Veterans Memorial High School, **$2,950,000.** CD 10/11.

▲ **Tex., Fort Worth**—DWELLING UNITS—Housing Authority, 500 W. Belknap St., plans by Olin Boese & Associates, 905 T & P Bldg., 272 dwelling units near I. M. Terrell High School, Tex-4-4, **$2,720,000.** Bids late 1961. CD 2/24.

▲† **Wash., Auburn**—OFFICE—General Services Admin., Federal Office Bldg., Seattle, Zone 4, remodeling depot for General Services Admin. Office, **$4,500,000.**

▲ **Wash., Pullman** — DORMITORY — Washington State University plans by Lea, Pearson & Richards, 240 S. Stadium Way, Tacoma, 10 story men's dormitory, **$2,250,000.** Bids about June 15. CD 10/27.

## COMMERCIAL BUILDINGS

▲ **Calif., Pasadena**—EXECUTIVE CLUB—Hawkins Constr. Co., 8580 Sunset Blvd., Los Angeles, plans by Paul R. Williams & Assocs., 3757 Wilshire Blvd., Los Angeles, 4 story, steel frame, executive club, Arroyo Parkway and Cordovia St. **$2,000,000.**

▲ **Conn., Waterbury**—HOSPITAL—St. Mary's Hospital Corp., 56 Franklin St., plans by Polak & Sullivan, 1397 Chapel St., New Haven, hospital addns., Scoville St. **$5,000,000.** CD 10/7/59.

▲ **D. C., Wash.**—SCIENCE CENTER, etc.—American University, Massachusetts and Nebraska Aves. N.W., plans by Faulkner, Kingsbury & Stenhouse, 1710 H St. N.W., Science Center, **$4,800,000;** School of Business Administration, **$1,500,000;** School of International Service addition, **$750,000;** field house-auditorium, **$1,200,000;** two dormitories, one for men, one for women, **$4,000,000;** Downtown Center, 1901 F St. N.W., **$3,750,000.** CD 5/8/56.

▲ **D. C., Wash.**—OFFICE—Joseph E. Jones, Ring Bldg., plans by Vlastimil Koubek, 810 18th St. N.W., office building at Connecticut Ave. and "R" St. N.W., **$3,000,000.** (Correction—owner). CD 11/11.

▲ **Ill., Chicago**—MOTEL—Aristocrats Ins of America, c/o Bacon Whipple & Co., 135 S. LaSalle St., plans by A. Epstein, 2011 Pershing Rd., Zone 9, 20 story McCormick Inn Motel, 23rd St. and Lakeshore Dr. **$15,000,000.** Naess & Murphy 80 E. Jackson St., Zone 4, consult. archts.-engrs.

▲ **Ill., Chicago**—HOSPITAL, etc.—Loyola University 6525 N. Sheridan Rd., plans by Schmidt Garden & Erickson, 104 S. Michigan Ave., Zone 3, hospital, Ionia Ave. and Carpenter Rd., **$10,000,000,** CD 3/6/45; plans by Barry & Kay, 53 W. Jackson Blvd., Zone 4, 4 story, air conditioned dental school, Congress Expresway, Harrison St., Oakley Blvd. and Hoyne Ave., **$5,000,000,** CD 9/27/51; 3 story University Science and Classroom, 6526 N. Sheridan Rd., **$1,500,000;** University Center, Lake Shore Campus, **$1,500,000;** 3 story University Center, Rush and Pearson Sts., **$1,750,000.**

▲ **Ill., Chicago**—APARTMENT HOTEL—Dave Zaransky & Solomon E. Harrison, 59 W. North Ave., plans by Bernheim & Kahn, 59 W. North Ave., apartment hotel, **$7,000,000.**

▲ **Ill., Evanston**—TECHNOLOGY INSTITUTE—Northwestern University, 619 Clark St., plans by Holabird & Root, 180 N. Wabash Ave., Chicago, Zone 1, Technology Institute addn. **$5,000,000.** Bids about Mar. 1. CD 7/8/60.

▲ **Mass., Boston** — BOWLING CENTER — Reva Enterprises, Inc., Worcester, Mass., plans by Ira Rakatanski, 48 Arcade Bldg., Providence, R. I., 80 lane Lincoln Lane Bowling Center, North Station. **$2,000,000.** Bids early 1961.

▲ **Mo., Hazelwood**—SHOPPING CENTER—Stephen Lumetta et al, 2416 N. 22 St., St. Louis 6, Mo., 180,000 sq. ft. Labor Mart Regional Discount Shopping Center, parking areas, etc., U.S. No. 66 between Bellefontaine Rd. and U.S. No. 67. **$3,000,000.**

▲ **N. J., Verona**—APARTMENT—Skyline Towers, Inc., c/o Dughi & Johnstone, 125 Allan St., Westfield, plans by Emil Schmidlin, 50 Evergreen Pl., East Orange, 12 story apartment, Hawkes-Padelford Sts. **$14,000,000.**

▲ **N. Y., New York**—APARTMENT, etc.—York Hill Housing, Inc., 331 E. 70 St., plans by Brown & Guenther, 1860 Broadway, New York 23, N. Y., 20 story apartment and garage, 1532-50 York Ave. **$2,695,000.** Farkas & Barron, 5 Beekman St., Zone 38, structural engrs. Carlson & Sweatt, 43 Exchange Pl., Zone 5, mechanical engrs. CD 8/25.

▲ **Pa., Phila.**—BUSINESS ADMINISTRATION, etc.—Temple University, 1900 Park Ave., School of Business Administration, Phase I **$1,400,000;** Phase II **$1,250,000;** teachers college, Phase I **$1,400,000,** Phase II **$1,100,000;** Communications, Phase I **$2,200,000,** Phase II **$2,000,000;** library expansion, Phase I **$1,500,000,** Phase II **$600,000;** physical education bldg., Phase I **$1,300,000,** Phase II **$1,250,000.** CD 2/7/45.

▲ **Pa., Phila.**—OFFICE—International Business Machines Corp., 590 Madison Ave., New York, N. Y., plans by Vincent G. Kling, 917 Corinthian Ave., 18 story, 3000 sq. ft. circular office, 17 and Market Sts., Penn Center, **$10,000,000.** Construction 1961. CD 2/4/53, under Pennsylvania Railroad as owner.

▲ **Pa., West Mifflin**—SHOPPING CENTER—J. D. Abbot Mortgage Co., Frick Bldg, Pittsburgh 190 000 sq ft, 16 acre West Mifflin Plaza Shopping Center, 1000 car parking, Lebanon Church Rd. **$3,000,000.** Bids Spring 1961.

▲ **Tex., Abilene**—SHOPPING CENTER—Globe Development Co., c/o John M. Bridge, archt., 279 N. Willis St., 193,000 sq. ft. Westgate Shopping Center; **$2,200,000.** CD 6/16.

▲ **Tex., Houston**—BANK-OFFICE—Forrest Lee Andrews, Gulf Bld. and Southern Nat'l Bank, plans by Wilson, Morris & Crain, and Andrews, 3330 Graustark Ave., and Cowell & Neuhaus, 5619 Fannin St., 10 story, bank-office, Main and Bell Sts. **$5,000,000.**

▲ **Tex., Houston**—OFFICE—Leopold Meyer, 1035 Meyerland Plaza Mall, 10 to 12 story office, Pierce, Gray, Main and Travis Sts. Approx. **$11,000,000.**

▲ **Ont., Toronto**—HOSPITAL—Seventh Day Adventists, Oshawa, plans by Jackson, Ypes & Assocs., archts-engrs; 24 Northtown Shopping Plaza, 5385 Yonge St., Willowdale, 6 story Branson Hospital addn., Bathurst St. and Finley Ave. **$2,500,000.**

## INDUSTRIAL BUILDINGS

▲ **Ark., Ozark**—PLANT—Ark. State Electric Co-operative Corp., 3111 East Broadway, North Little Rock, Thomas B. Fitzhough Steam Generating Plant, **$10.000,000.** Burns & McDonnell, 4600 E. 63rd St., Trafficway, Kansas City 41, Mo., consult. engrs. CD 4/7.

▲ **Fla., Port Tampa**—PLANT—National Gypsum Co., 325 Delaware Ave., Buffalo, N. Y., manufacturing plant. **$6,000,000.** Bids mid-January.

▲ **La., Geismar**—CHEMICAL PLANTS—Monochem, Inc. (Borden Co., 350 Madison Ave. and United States Rubber Co., 1230 Avenue of Americas, New York, N. Y.), chemical plants to convert hydro-carbons to chemical products. **$30,000,000.**

▲ **N. J., Burlington**—PLANT—Phoenix Steel Corp., 24 Broadway, New York, N. Y., will not construct steel plant. **$10,000,000.** Project abandoned. CD 6/10/58 under Barium Steel Corp. as owner.

▲ **N. J., North Brunswick** — WAREHOUSE — Goodyear Tire & Rubber Co., 1144 E. Market St., Akron, O., 400x1,050 ft. steel framed warehouse. **$3,500,000.** CD 11/14.

▲ **O., Cincinnati** — PARKING GARAGES — Expressway Parking Co., 519 Main St., will not construct two parking garages, between Race, Vine, Main and Walnut Sts. **$6,600,000.** Vogt, Ivers, Seaman & Assocs., 34 W. 6th St., archts. Project abandoned. CD 11/23.

▲ **N. Y., New York**—WAREHOUSE—Irving Maidman, 1501 Broadway, Zone 36, plans by Wechsler & Schimenti, 118 E. 25 St., Zone 10, 2 story, bsmnt., 80,000 sq. ft., aluminum and glass, rein.-con. warehouse and industrial bldg., incl. heliport on roof, 10-11 Aves., 17-18 Sts. **$2,000,000.** Constr. early 1961.

▲ **O., Hamilton**—PLANT—General Motors Corp., General Motors Bldg., Detroit, Mich., 214,000 sq. ft. plant for Fisher Body, **$10.000.000.** CD 4/11/45.

**(Proposal Advertisements see pp. 81 to 82)**

A MESSAGE TO AMERICAN INDUSTRY • ONE OF A SERIES

# How American Industry Points The Way To Sustained Prosperity in 1961

Something new and very constructive is happening in American industry. It promises to add a major element of strength to business not only in 1961 but right along over the years ahead.

What is happening is essentially this. **American industry is planning to continue to invest heavily in new and better producing facilities in spite of the fact that it has an excess of capacity to produce its present range of products. And, by doing so, business is helping to shape a stronger American economy.** For the continuation of a high level of capital investment by business is one of the most important keys to sustained prosperity.

News of this major new development in American industry is provided by the results of the McGraw-Hill Fall Survey of Business Investment Plans for 1961 and 1962, presented in detail at the right. The McGraw-Hill investment surveys, now in their 13th year, cover a broad cross-section of American industry.

How American industry is aiming to go ahead with a big investment program in spite of its present burden of excess producing capacity is highlighted by the plans of manufacturing companies. The McGraw-Hill fall survey finds that, on the average, these companies are using slightly less than 80 per cent of their producing capacity. They would like to be using well over 90 per cent.

## Dramatic New Departure

If historic investment patterns were being followed, our manufacturing companies, with only about 80 per cent of their capacity being employed, would be cutting back new investment programs drastically, and cutting down prosperity in the process. **But — and here is the dramatic new fact — they plan almost no cut-backs in their investment programs.** They plan to invest almost as much (within 3%) in 1961 as they are investing this year. And this year they are investing 19 per cent more than they did in 1959.

**There are two major reasons why American industry is unwilling to let its excess producing capacity stall its investment in new facilities until the capacity is more fully used. One is that a lot of this capacity is obsolete and costly to operate.** Increasingly rugged competition is creating a strong inducement to replace this antique capacity with modern, more efficient equipment which is widely available.

**PLANS FOR CAPITAL SPENDING**

(Billions of Dollars)

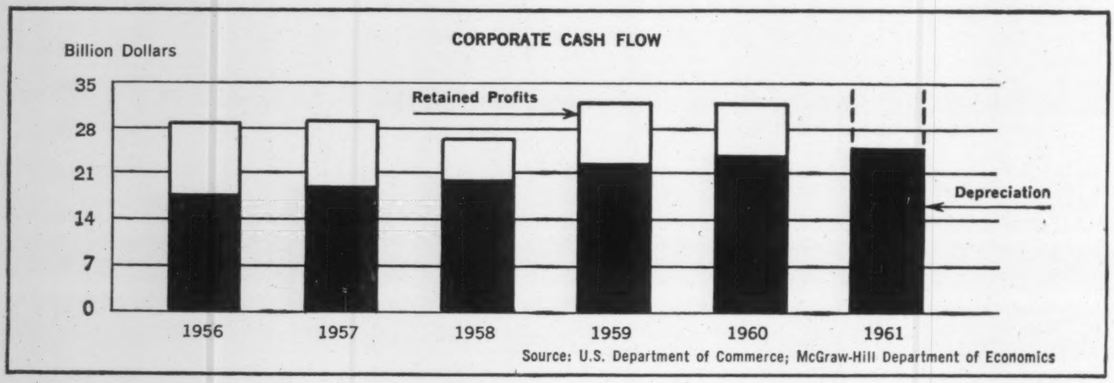
| INDUSTRY | 1959 Actual* | 1960 Estimated* | 1961 Planned | 1960-1961 % Change | 1962 Planned |
|---|---|---|---|---|---|
| Iron and Steel | $1.04 | $1.52 | $1.37 | —10% | $1.18 |
| Nonferrous Metals | .31 | .34 | .34 | 0 | .32 |
| Machinery | .91 | 1.15 | 1.11 | — 3 | 1.11 |
| Electrical Machinery | .52 | .62 | .68 | +10 | .63 |
| Autos, Trucks & Parts | .64 | .89 | .95 | + 7 | 1.02 |
| Transportation Equipment (Aircraft, Ships, R.R. Eq'pt.) | .39 | .41 | .37 | —10 | .35 |
| Other Metalworking | .88 | .97 | .85 | —12 | .87 |
| Chemicals | 1.24 | 1.61 | 1.64 | + 2 | 1.59 |
| Paper and Pulp | .63 | .75 | .69 | — 8 | .53 |
| Rubber | .19 | .24 | .23 | — 4 | .20 |
| Stone, Clay and Glass | .53 | .63 | .56 | —11 | .55 |
| Petroleum & Coal Products | 2.49 | 2.45 | 2.52 | + 3 | 2.50 |
| Food and Beverages | .82 | .94 | .99 | + 5 | .97 |
| Textiles | .41 | .53 | .42 | —21 | .40 |
| Miscellaneous Manufacturing | 1.07 | 1.28 | 1.21 | — 5 | 1.13 |
| ALL MANUFACTURING | 12.07 | 14.33 | 13.93 | — 3 | 13.35 |
| Mining | .99 | .99 | .90 | — 9 | .89 |
| Railroads | .92 | 1.04 | .79 | —24 | .83 |
| Other Transportation & Communications | 4.69 | 5.20 | 4.61 | —11 | 4.18 |
| Electric And Gas Utilities | 5.67 | 5.89 | 6.14 | + 4 | 6.01 |
| Commercial (1) | 8.21 | 8.61 | 8.70 | + 1 | 8.54 |
| ALL BUSINESS | 32.55 | 36.06 | 35.07 | — 3 | 33.80 |

*U.S. Department of Commerce, Securities and Exchange Commission, McGraw-Hill Department of Economics.

(1) Figure based on large chain, mail order and department stores, insurance companies, banks and other commercial businesses.

## "R And D" Paves The Way

The steel industry provides a good case in point. Despite an operating rate of little more than 50 per cent during the last six months, steel companies plan a total investment of nearly $1.4 billion in 1961. And though this is 10 per cent below their capital expenditures in 1960, it will still be the third highest year on record.



CORPORATE CASH FLOW

Source: U.S. Department of Commerce; McGraw-Hill Department of Economics

**Also, new investment is required to tool up for the manufacture of the new products being spawned by the continuing boom in industrial research and development.** This year, we are spending about $13 billion (that's *billion*) for all research and development, about $9.6 billion of it through industry.* And out of it is coming the "know-how" for a veritable flood of new products, processes and equipment, most all of these calling for new producing equipment. Next year, American manufacturers plan to get 12 per cent of their sales in products that did not even exist four years ago.

## Key Role Of Depreciation Reserves

**A major reason why American industry can combine the desire to carry out big new investment programs with the necessary financial capacity to do it is to be found in the growth of its reserves for depreciation.** This year, (1960), business has been in a squeeze between costs and the prices it could get for its products. This cost-price squeeze has reduced profits sharply. The total of profits for the year will be down about 5 per cent.

Allowances for the depreciation of existing plant and equipment, however, have continued to rise. The result is that the so-called cash flow of corporations (their retained profits plus their allowances for depreciation) is the same this year as last. And this cash flow, shown in the chart above, makes a decisive contribution to financing new investment.

## Inflation Would Be Deadly

If the sort of profit squeeze that has prevailed this year were to become chronic, it would blight both the incentive and wherewithal to continue a vigorous program of new investment. In addition, if price inflation were to begin surging again, it would eat away the power of depreciation reserves to purchase new plant and equipment.

The allowances now permitted American industrial firms for the depreciation of their producing facilities are lower than those made in any of the industrial countries with which we are in increasingly tough competition. More adequate allowances would speed up the job of modernizing American industry. An earlier McGraw-Hill survey indicated that it would cost only slightly less than $100 billion to bring our nation's plant and equipment up to date.

**But at this juncture, American industry's eagerness and capacity to maintain a high level of investment capital is adding a great new element of constructive strength to the nation's economy.**

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*The significance of this boom for American industry is analyzed in a new McGraw-Hill book, "The Research Revolution" by Leonard Silk, Economics Editor of BUSINESS WEEK. Together with other new business investment trends the "R & D" boom also constitutes a key part of another new McGraw-Hill book, "New Forces in American Business" by Dexter M. Keezer and associates — the November selection of the Business Book Club.

This message was prepared by my staff associates as part of our company-wide effort to report on major new developments in American business and industry. Permission is freely extended to newspapers, groups or individuals to quote or reprint all or part of the text.

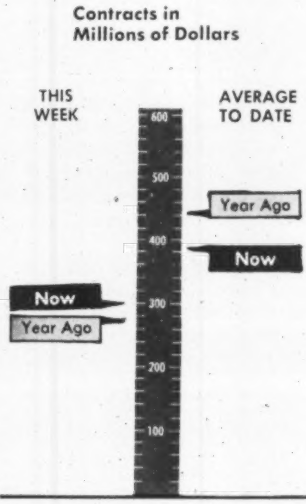
Donald C McGraw

PRESIDENT

**McGRAW-HILL PUBLISHING COMPANY**

# Construction Scoreboard

## This Week . . .



### AMOUNT OF CONTRACTS LET

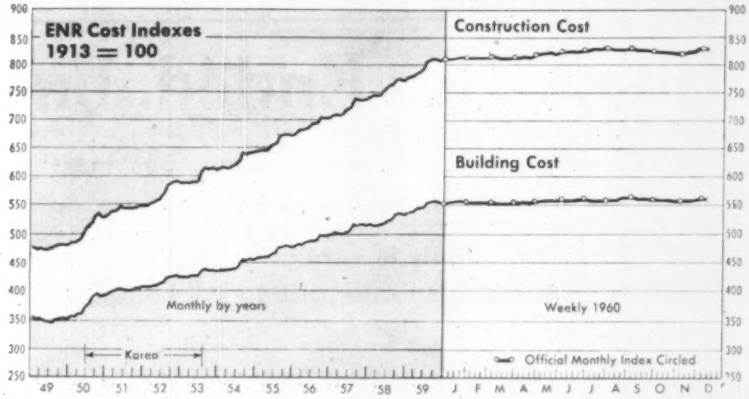
| Contracts Awarded In 50 States By Type | This Week (millions) | Cum. 50 wks 1960 (millions) | Chge '59-'60 % |
|---|---|---|---|
| **All Heavy Construction** | $300.9 | $22,160.6 | +14 |
| **By Ownership** | | | |
| PRIVATE | 171.9 | 11,854.8 | +19 |
| PUBLIC | 129.0 | 10,305.8 | + 8 |
| State & Municipal | 93.2 | 7,996.7 | +18 |
| Federal | 35.8 | 2,309.1 | −15 |
| **By Type of Work** | | | |
| PUBLIC | | | |
| Waterworks | 6.4 | 445.2 | +21 |
| Sewerage | 8.0 | 580.1 | − 7 |
| Bridges* | 3.4 | 763.7 | +41 |
| Highways | 21.0 | 3,262.1 | +17 |
| Earthwork, Dams & Waterways | 19.4 | 739.0 | −14 |
| Buildings: | | | |
| Excl. Housing | 56.1 | 2,472.3 | − 1 |
| Housing | 4.4 | 680.2 | +17 |
| Unclassified | 10.3 | 1,371.9 | + 3 |
| PRIVATE: | | | |
| Buildings: | | | |
| Mass Housing | 59.5 | 5,663.6 | +26 |
| Commercial | 41.8 | 2,484.6 | +21 |
| Industrial | 63.3 | 2,712.4 | − 6 |
| Unclassified | 7.3 | 985.5 | +106 |

*Includes Private bridges.

NOTE Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

### NEW CONSTRUCTION CAPITAL

| | Week of Dec. 8 (millions) | Cum. 49 wks (millions) | Chge '59-'60 % |
|---|---|---|---|
| Corporate Securities | $ 50.7 | $3,517.0 | −12 |
| State & Municipal: | | | |
| All Except Housing | 73.1 | 5,988.6 | + 8 |
| Housing | 2.1 | 215.9 | +101 |
| Federal Loans | 1.9 | 175.7 | +31 |
| Federal Aid | .... | 3,228.4 | − 3 |
| **Total Nonfederal** | $127.8 | $13,125.7 | − 0.2 |
| Federal Appropriations: | | | |
| Projects in U. S. | .... | $3,165.6 | −11 |
| Outside U. S. | .... | 159.1 | +610 |
| **Total New Capital** | $127.8 | $16,450.4 | −2 |



| ENR INDEXES (1913=100), 20-cities' average | Week of Dec. 8 1960 | % Change from Nov. 10 1960 | % Change from Dec. 10 1959 |
|---|---|---|---|
| Construction Cost | 830.48 | +0.05 | +2.7 |
| Building Cost | 561.37 | +0.05 | +1.6 |

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

## Latest Month . . .

### CONTRACTS AWARDED

| | 1960 November (millions) | 1960 11-Mos. (millions) | Percent Change from 1959 Nov. | Percent Change from 1959 11-Mos.† |
|---|---|---|---|---|
| Total U. S. (ENR reported) | $1,775 | $21,029 | +21 | +14 |
| Private | 880 | 11,318 | +11 | +21 |
| Public | 895 | 9,711 | +33 | + 7 |
| State and Municipal | 667 | 7,549 | +29 | +16 |
| Federal | 228 | 2,162 | +49 | −15 |
| ENR Volume Index, 1913 = 100 | 609 | 607 | +20 | +11 |

†Based on average week: 47 weeks in 11 months of '60, and 48 weeks in 11 months of '59

### NEW CONSTRUCTION CAPITAL

| | | | | |
|---|---|---|---|---|
| Total U. S. | 775 | 16,255 | −29 | + 0.3 |
| State and Municipal Bond Sales | 445 | 6,072 | + 0.3 | +11 |
| Corporate Security Sales | 319 | 3,456 | −50 | −10 |
| Federal Loans, Aid (nonfederal work) | 11 | 3,402 | +18 | 0 |
| Federal Appropriations* (federal work) | 0 | 3,325 | 0 | − 7 |

*Includes funds for outside U. S.

### MATERIALS SHIPMENTS

| | Unit | 1960 Sept. (S) Oct. (O) | 1960 Cum. No. of Mos. | Percent Change from Year Ago Mo. | Percent Change from Year Ago Cum. |
|---|---|---|---|---|---|
| Portland Cement, Bur Mines | thous bbls | 32,931(O) | 272,185(10) | + 2 | − 7 |
| Concrete Paving Awards, PCA | thous sq yd | 8,541(O) | 88,474(10) | +86 | + 8 |
| Fabricated Structural Steel | thous tons | 314(O) | 2,901(10) | +61 | +17 |
| Bookings, AISC | thous tons | 220(O) | 2,748(10) | −10 | + 6 |
| Reinforcing Bars, Net, AISI | thous tons | 229(O) | 1,890(10) | ‡ | ‡ |
| Lumber, NLMA | mil fbm | 2,684(O) | 29,733(10) | −15 | − 3 |
| Orders | mil fbm | 2,626(O) | 28,320(10) | −13 | − 7 |
| Production | mil fbm | 2,801(O) | 29,782(10) | −15 | − 3 |
| Clay Products, Bureau of Census | | | | | |
| Brick, Unglazed, Common, Face | mil bri | 610(S) | 5,000(9) | −12 | −11 |
| Vitrified Clay Sewer Pipe | thous tons | 187(S) | 1,438(9) | − 4 | − 5 |
| Structural Tile, Unglazed | thous tons | 40(S) | 380(9) | −13 | − 7 |
| Asphalt Products, Bureau of Census | | | | | |
| Asphalt Roofing | thous sales sqs | 6,770(S) | 44,475(9) | + 4 | − 3 |
| Asphalt Siding | thous sales sqs | 96(S) | 612(9) | −10 | −11 |
| Aluminum, Wrought, Net, Bur Census | | | | | |
| Sheet and Plate (non-heat treatable) | mil lbs | 98(S) | 941(9) | + 3 | − 4 |
| Wire and Cable | mil lbs | 27(S) | 228(9) | + 4 | − 9 |
| Extruded Shapes (soft alloys) | mil lbs | 70(S) | 616(9) | −14 | − 9 |

‡Data for Aug., Sept., Oct. '59 not available due to steel strike

### EMPLOYMENT AND FAILURES

| | | | | | |
|---|---|---|---|---|---|
| Contract Const Employment, BLS | thous | 3,012(O) | 2,787(10)** | + 2 | + 1 |
| Contractor Failures, Dun & Bradstreet | | | | | |
| Number | | 231(O) | 2,134(10) | +41 | +24 |
| Liabilities | thous | $17,877(O) | $156,582(10) | +25 | +16 |

**Average per month    p = preliminary estimate

# Boom Has Ended, but Homebuilders

- **There's gloom here, joy there; but most reflect the general mood of business—cautious optimism.**
- **Key fact: Supply has caught up with demand—now it's up to quality and price to sell houses.**

The nation's homebuilders these days sound like a choral group without a director—a few are singing the blues, some are ringing out a "hallelujah," but most are just humming and hoping that by 1961 someone with a baton and repertoire will show up.

Only in Cleveland, Detroit and New Orleans is there a mood that can be fairly described as gloomy. At the opposite end of the scale is Omaha, where builders are almost jubilant, and Atlanta and Philadelphia, where there is a generous measure of optimism.

Restrained or cautious optimism is the note struck in Baltimore, Boston, Chicago, Cincinnati, Dallas, Denver, Hartford, Los Angeles, Miami, New York, Pittsburgh, St. Louis, San Francisco and Seattle.

**That's the gist of reports from ENR editors and correspondents, who have just completed a survey of homebuilders in those 20 major metropolitan areas.**

**The most common reaction—cautious optimism—is in line with the mood of businessmen in general.** They hope and think that the national economy will come out of its lateral movement and turn upward, if only moderately.

**The builders' mood may be a basic shift away from the economic theorizing of the past few years or it may be founded on doubt about the direction of the incoming Kennedy Administration.**

If the builders' attitude represents a basic shift in economic appraisal, this would indicate that they—as some economists—now conclude that private housing construction is no longer an important contracyclical element in the economy. In past years--most recently in 1958—housing was instrumental in pulling the nation out of recession. New houses created massive demand for all types of building materials, major appliances, and, to a smaller extent, cars.

**The housing upsurges resulted from administrative or congressional moves in the area of government-backed mortgages that tended to turn existing demand for houses into sales.** These actions included:

- Reducing down-payment requirements almost to the vanishing point in the case of housing financed by mortgages insured by the Federal Housing Administration.
- Eliminating need for a down-payment on housing financed with mortgages guaranteed by the Veterans Administration.
- Extending allowable amortization to 30 years for both FHA and VA mortgages.
- Lowering ratio of required income to the amount of indebtedness to be assumed by the home-purchaser.

**Means to stimulate the market now are limited to eliminating what's left of the FHA down-payment requirement and extending allowable amortization to 35 or 40 years.**

Lengthening the term of maturity probably is in the cards for next year. Such legislation was introduced this year in Congress, but the omnibus housing bill, in which the extension was contained, failed to clear Congress.

Extending mortgage maturity to 35 years would mean payments to principal of about $28.60 a month on a $12,000 mortgage; a 40-year maturity on the same amount would lower repayment rate to $25 a month. These monthly totals compare to $33.35 a month on a $12,000 mortgage due in 30 years.

The difference between the 35- and 40-year repayment schedules and the present 30-year schedule, could also be the difference between qualifying or disqualifying a would-be purchaser. The potential in terms of increased sales and construction, however, is difficult to measure.

Builders disagree on the value of longer amortization. Some say financing is a key to increased sales, others say increased confidence in the economy is the answer.

This is particularly true in Cleveland.

**Availability of money is no problem in Cleveland—there's just no demand,** builders report. Says a spokesman for A. Sigler and Sons: "Unless the mills start operating at full capacity, unless the average workingman is working a full week, he won't consider the biggest investment of his life—buying a house. People are scared. They're working short weeks and everyone is telling them things may get worse. How can we expect them to buy homes?"

With this the dominant feeling in Cleveland, builders are holding back on future plans. Many have completed houses still standing empty. One even reports an inventory sufficient to carry him through all of next year at the present rate of sales in both the $14,000-to-$16,000 bracket and the $16,000-to-$20,000 bracket.

**In New Orleans, Baton Rouge and other communities in southern Louisiana the outlook is summed up as "pretty grim."**

"Unless there is a big pickup under the new Administration, next year will be little better than this year, which is down about 15% to 20%. But no matter what is done, it will come too late to help much in 1961," a builder spokesman reports.

The builders are not just wringing their hands, however. They have formed a New Orleans-area cost reduction study committee, which will attempt to obtain elimination of "unnecessary building code requirements that raise housing costs."

**In Detroit—indeed in most of Michigan—economic conditions are at the root of the housing decline, which is placed at 20%,** "and next year may be worse," according to a spokesman for the Builders Association of Metropolitan Detroit.

The most graphic description came from that association's president, Irving Lavine: "If we're going to talk about the 1961 housing outlook, let's talk with lots of red ink and black crepe paper in front of us to form the picture."

Most builders indicate that the state must provide inducements for new industry and existing industry if the general economy is to be improved. "Part of the building tragedy here is lack of in-migration," says one builder.

**This is not the case in the Omaha area. "The outlook is terrific,"** is the way one builder summed up. The bright future here is partially attributed to the presence of Strategic Air Command installations. But Leslie Martin,

# Are Hopeful

president of Nebraska Savings and Loan Co., says, "Business is good in all lines because of our diversified economy containing industry, food processing and meat packing and agriculture.".

**More common in the rest of the nation, however, is the forecast that housing starts will either remain the same as this year or rise by between 5% and 15% depending on the region.**

**These forecasts are predicated on the much-improved supply of money ready and willing to be invested in mortgages.** Discounts are small; in some areas, such as Hartford and Atlanta, there are none at all. (When a mortgage is discounted, a borrower receives less cash than the amount he contracts to borrow, but pays interest on the contract amount and repays the contract amount.)

In some areas where discounts are still obtained, it is expected that they will disappear during the first or second quarter of 1961. This is particularly true in the East and Midwest. West Coast states may retain some discount charge, but it would be small in comparison to those of early this year of 5% to 8%.

Savings are building up in banks and savings and loan associations, but demand for mortgages is slight.

The situation is succinctly summed up by John Gensley of Los Angeles, a vice president of Bank of America: "Money is available; buyers don't seem to be."

**The absence of buyers in almost all sections of the country is attributed to the high price of houses as well as to lack of confidence.** It is significant that a large number of builders are lowering prices by providing a basic house. The new-house sales operation is rapidly approaching that of the car market. For so much you get the basic structure. But add an extra lavatory, a built-in major appliance, a patio or a paved driveway, and the price goes up accordingly. The buyer who doesn't want the "accessories," can get a fairly good buy in shelter and comfort.

Builders say, however, that they can go just so far in bringing down prices this way. "If people are being priced out of the home market, it's because of the high cost of land and archaic municipal zoning laws that force builders to waste costly property through excessive setbacks and increased lot sizes," says Charles Wellman, vice president of Glendale, Calif., Federal Savings and Loan Association."

## Business in Brief . . .

- **Proposals for idle island**—The Department of Health, Education and Welfare has received two proposals for the future use of New York Harbor's Ellis Island, formerly the federal government's immigration center. One proposal is for an experimental college; the other is for an international diagnostic center for the mentally retarded.

- **Big plant for South**—Monochem, Inc., a combine of the U. S. Rubber Co. and Borden Co., will build a $50-million petrochemical plant near Geismar, La. Completion is scheduled for 1962.

- **Century City award**—A contract for engineering and planning reports goes to Daniel, Mann, Johnson & Mendenhall to cover streets, utilities drainage and grading requirements at 260-acre Century City in Los Angeles (ENR Nov. 10, p. 96). First buildings—a shopping center plus apartments and offices—are scheduled to start next spring.

- **Billion-dollar problem**—California's state superintendent of public instruction says the state must spend more than $1 billion in the next four years to meet the four-million annual student enrollment expected by 1964.

- **Thumbs down on bridge**—A proposed $39-million bridge across the St. Johns River at Jacksonville, Fla. has been vetoed by the Corps of Engineers as a potential hazard to navigation. The Jacksonville Expressway Authority, which proposed the project, and consulting engineers Reynolds, Smith & Hill, are now trying to find a suitable and acceptable location for the crossing.

- **Looking ahead**—A $5.7-million, long-range improvement plan has been proposed for Santa Maria, Calif., airport by San Francisco consultant Leigh Fisher. First stage: A $600,000 terminal building and entrance road. To follow: a motel, service station and parking area.

# Los Angeles 'El': $625 Million

Coverdale & Colpitts, New York City consulting engineers, estimate that the Los Angeles Metropolitan Transit Authority will have to sell $625 million worth of bonds to cover construction and financing costs of the area's proposed rapid transit system.

**This was a big answer contained in the economic and feasibility study submitted last week** to MTA directors by George W. Burpee, senior partner in the engineering firm. Of the total bonds required, $529.7 million is expected to go for actual construction.

The passenger-revenue survey applied to the 74.9-mile system extending from the Los Angeles central business district to Covina, Santa Monica, Long Beach and Reseda. This study was done by Daniel, Mann, Johnson & Mendenhall (ENR Sept. 15, p. 23). DMJM said the most economical system to build and operate would be one utilizing rubber-tired electric trains running overhead.

Coverdale & Colpitts estimates passenger revenues will be $29.7 million in 1965 and $37.5 million in 1980. (The revenue study used 1965 as the first year of rapid transit operation.)

MTA officials are studying the report in order to recommend cheaper financing to the state Senate transportation committee this week.

The authority fears revenue won't be enough to pay interest on a revenue bond of the size needed. It must either scale down the proposed system or get cheaper financing.

Revenue estimates were based on a fare schedule of 25 cents for trips averaging slightly less than three miles, increasing proportionately for longer trips. Average fare for the system, says Mr. Burpee, would be 45 cents in 1965 and 46 cents in 1980.

The system would carry an estimated 65 million passengers by 1965.

It would cost $9.15 million to operate and maintain the system in 1965, leaving $20.5 million for interest and repayment of principal. In 1980, it would cost $10.93 to operate and maintain the system, leaving $26.6 million for debt service.

In preparing the study, "We have contemplated one-man train crews and maximum application of automation in fare collection and all other phases of operation," Mr. Burpee reported.

# Construction Turns to SBICs

- **Small Business Investment Companies are a new source of capital for big private projects.**
- **Less than two years old, the operation already shows promise of becoming a major financing tool.**

An old Southern estate of 600 acres outside Rome, Ga., is being converted into an ultra-modern residential, commercial and industrial community with the help of a new source of capital—a small business investment company.

The SBIC is Tennessee Investors, Inc., composed of 51 banks in Tennessee. The development-construction company is Beech Creek Homes Corp., which already has received $275,000 from Tennessee Investors and two of its member banks, along with a commitment for more funds during various construction stages.

The transaction is rather typical of the operation of an SBIC. (There are now 168 of them in almost all sections of the country.) This new source of capital investment funds seems almost certain to grow rapidly.

**Signed into law in August, 1958, the SBIC program appears admirably suited to the needs of real estate-construction companies,** which often find it difficult to obtain large amounts of investment capital by more conventional means and sources.

One of the earliest SBICs, Allied Small Business Investment Corp. of Washington, D. C., made its first investment in June 1959, when it purchased convertible debentures amounting to $40,000 to help finance construction of an apartment house. The debentures carried an interest rate of 10.5%, payable monthly, the principal to be repaid in a lump sum at the end of five years unless converted into stock by Allied.

Since then, Allied has invested more than $583,000 in various real estate projects along the East Coast. Its investment methods include straight loans, debentures and preferred stock. Its rate of return on investments exceeds 11%, with no defaults.

Allied, the nation's third licensee, also is a good example of how the federally sponsored SBIC program works. It started with a capital and surplus of $163,000 contributed by several Washington business leaders plus $137,000 committed by the Small Business Administration, which administers the program.

Exhausting its original funds in short order, Allied supplemented its capital through a public offering of stock last February for gross proceeds of $1.1 million. In June, it received an additional loan commitment of $720,000 from SBA.

As of September 30, Allied had disbursed or committed a total of $1.7 million to 16 small concerns in the District of Columbia, Maryland, Virginia, Connecticut, California, Florida and North Carolina. Nearly $1.2 million of that is in convertible debentures or other equity-type securities; about $540,000 is in loans. Interest rates range from 5% to 12%.

Tennessee Investors was the nation's twentieth SBIC. It has boosted its original capital of $335,000 to $500,000. It is now negotiating with Equitable Securities of Nashville to underwrite a public stock offering of about $5 million.

**SBA officials estimate that SBICs have provided new or additional financing for nearly 300 small businesses in the 18 months since President Eisenhower signed the Small Business Investment Act.** And they, along with SBIC operators, and Sen. John J. Sparkman (D., Ala.) and Rep. Wright Patman (D., Tex.), chief congressional sponsors of the program, believe this is but a beginning.

Messrs. Sparkman and Patman plan to introduce legislation next year permitting SBICs to borrow from the government a sum equal to their capital and surplus, which now totals close to $200 million. They now can borrow only half of this.

More than half of the $200 million still is available for investment, the larger SBICs apparently waiting for top-notch investment opportunities. Of the total available or already disbursed, the government has contributed about $30 million. This encourages Senator Sparkman and Representative Patman to believe that even limited amounts of federal funds will generate much larger private sums.

An SBIC must start with capital of at least $300,000, including an SBA commitment of $150,000. But most have found this inadequate. Many have "gone public" to raise additional funds.

The government loans SBICs funds at 5.5%, usually accepting 20-year subordinate debentures. Interest is payable only for the first 10 years, with repayment of principal beginning in the eleventh year.

**There has been, of course, considerable criticism of interest rates charged by SBICs—they range from 5% to 15%.** Senator Sparkman, calling the 15% rate "unconscionable," has introduced a bill to limit the rate to a maximum of 10%.

**Charles M. Noone, general counsel of the National Association of Small Business Investment Companies, argues that the extra risk involved in most SBIC loans warrants higher interest.** He also contends that the interest is not as high as it seems, since it is an "effective rate," not one loaded with extras or hidden fees and charges.

Actually, Mr. Noone says, companies charging the 15% rate are few and far between; the great majority of SBIC loans made to date are closer to an effective 7% rate. Loans are made for a minimum of five years and may run for as long as 20 to 30 years. Equities, of course, may constitute permanent financing.

Senator Sparkman, who just a year ago was discouraged at the slow pace at which new SBICs were being licensed, now believes the program is off the ground and on the way up. With President-elect Kennedy actively behind the idea, Senator Sparkman feels the next Congress can be convinced to:

- Increase the original total of subordinate debentures SBA may accept from an SBIC from $150,000 to $1 million.
- Raise the total SBA may commit to an SBIC from 50% of its capital and surplus to 100%.
- Establish a statutory tax-deductible bad-debts reserve for SBICs to encourage more high-risk investments.
- Permit SBICs to participate with SBA in making loans to small businesses.

All have a good chance of approval in the 87th Congress.

Considered less likely is a further proposal by Mr. Patman to create a new banking agency that would raise funds needed by SBICs. He feels such a bank, operating on behalf of SBICs, would be in an advantageous position to obtain funds on the national money market through issues of attractive debentures.

All the dry mix leaves the box because of the smooth, dent-free surface of USS "T-1" Steel bottom plates. Extra clean-out men are not needed. Understructure, sides, batch and tail gates are USS COR-TEN Steel for strength and light weight. Truck Body Fabricator: Capital Industries, Inc., Seattle, Washington.

# The best combination for performance . . .

## Dump truck bodies made of USS "T-1" and COR-TEN Steels

"Pouring 4,100 feet of concrete highway is a good day's work," says Louis Tomaso, pouring superintendent for Northwest Construction Company, Seattle, Washington. "This kind of production takes the best equipment. That's why we are sold on dump boxes made with U. S. Steel's 'T-1' and Cor-Ten Steels."

"With 'T-1' Steel in the bottoms and Cor-Ten Steel in the sides and gates, we get a clean dump every time," says Mr. Tomaso. "The surface remains smooth and dent-free. None of the mix hangs up in the truck."

Northwest's trucks also double as earth movers and here's where they meet their real test. The maintenance superintendent, Homer Baer, says, "USS 'T-1' Steel is tough enough to take the impact of heavy rocks falling from the shovel and the 3/16-inch bottom plates have never ruptured, stretched or dented."

**Less weight—more payload.** The combination of USS "T-1" Constructional Alloy Steel and Cor-Ten High Strength Steel cuts 1,020 pounds of dead weight from the trucks and allows bigger payloads. "T-1" Steel has a minimum yield strength of 100,000 psi and Cor-Ten Steel's yield point is 50,000 psi minimum. Both steels are workable and weldable and offer superior resistance to abrasion and atmospheric corrosion. For more information, write to any district office of United States Steel or to Room 2801, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

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# Peace Proposal Is Turned Down

### Labor and management spokesmen disagree at an industry conference on path to industrial peace

Efforts to narrow the gulf between labor and management received another setback last week.

**A spokesman for the National Association of Manufacturers rejected out of hand a labor spokesman's proposal for formation of some kind of national council, representing labor, management and the public, to try to promote industrial peace and national prosperity.**

**"Free and untrammeled" collective bargaining is still the most acceptable solution to labor problems,** said L. A. Petersen, management's spokesman.

Mr. Petersen is president of Otis Elevator Co., which is one of the companies that has just emerged from an 18-week strike of New York City elevator constructors. He is also chairman of the management members of a joint group that has been working with little progress toward a White House labor-management peace conference.

**Essentially, what Mr. Petersen proposed is that an enlightened union movement unilaterally curb its contract and legislative demands to what management considers to be fair and proper.**

The exchange of views occurred at the 65th Congress of American Industry, sponsored in New York City by NAM.

The labor viewpoint was presented by Arthur Goldberg, attorney for the steelworkers union and special counsel to the AFL-CIO.

Both men were in general agreement in their appraisal of the current situation—that there is too much bitterness between labor and management; that the national welfare demands the two groups quit dissipating their energies in a wasteful feud and work together toward common and constructive goals.

**Mr. Goldberg, expressing personal rather than labor views, argued that collective bargaining alone cannot cope with the magnitude and complexity of current labor problems,** and that "desultory talks" between top echelons of labor and management are not enough. He suggested that these be fortified by a national, tripartite agency formed within the framework of the federal government. The agency would serve two broad functions: Advise the President on economic and legislative programs; and help labor and management map guidelines to industrial peace.

**In reply, Mr. Petersen raised the red flag of federal intrusion** and said that the "bureaucratic" Goldberg proposal, despite its "thick sugar coating," would lead to further government controls. Such an agency, he added, could never solve the radically different problems of the many, highly diversified companies in the nation.

**As a counter-proposal, Mr. Petersen suggested that management teach the workers the economic facts of life, the thought apparently being that educated workers would be more amenable to management suggestions and less so to those of unions.** The course of instruction would show, among other things how wage and fringe costs affect profits and job security, and how wage increases not compensated for by increased productivity lead to inflation.

Mr. Petersen also called on labor to be more responsible and more productive, to back away from industry-wide bargaining, to discourage government interference and to meet management half-way in efforts to create a more constructive labor relations atmosphere.

The basic problem in all critical labor disputes was raised by Mr. Petersen. He said that the benefits of "increased productivity must be distributed equitably among the customers, the production workers and the shareholders."

He listed this as one of the "fundamental economic facts" to be taught workers and would presumably leave the ultimate solution to collective bargaining.

# Industrial-Type Contract Flops

A Montana manufacturer of prefabricated homes and one of the AFL-CIO building trade unions tried to simplify collective bargaining and ran into trouble.

Last February, Hughes Homes, Inc., and Local 112 of the carpenters union signed what they called an "industrial-type" labor contract.

The union agreed that the workers covered by the contract would do whatever work "is required in the complete manufacture of the house package, in accordance with the plans and specifications of the company."

When the need for painting arose, members of the union refused to do that work. It traditionally belongs to the painters union. The eight carpenters who refused were discharged. The dispute went to arbitration and the union lost.

Company officials explained to the arbitrator that the industrial-type contract, which covered all workers regardless of the kind of work they would be called upon to do, was designed to accomplish two things: Promote continuous employment for workers of a small plant; avoid jurisdictional disputes.

The union contended that such a contract was new to the area and that whatever difficulties it produced should have been resolved by committees and conferences. In view of past practices in the area, it said, discharge for refusal to perform work outside of its jurisdiction was arbitrary and unreasonable.

The arbitrator found that the contract was not ambiguous, that it superceded past practices under craft-type agreements and that the discharges were justified. The arbitrator noted that it was not his function "to dwell on the wisdom of a craft union in making industrial-type contracts."

Commenting on the problem that arose, the president of the firm said he believes, "The present misunderstanding could have been averted had all unions involved been included in the drawing up of the industrial contract.

"Unions here are not unreasonable," he added, "but we feel that there is a lack of knowledge with regard to modernization of union contracts relative to certain building operations. We believe it would be advisable to have a committee named from business and labor to make a survey as to what the procedures are in other communities relative to industrial contracts."

Hughes, which had 60 to 70 employees in Butte, where the trouble occurred, has moved its major operations to Billings. The company concedes that the labor problem, which it minimizes, was one reason for the transfer, but says it still has plans to expand in Butte.

## Labor in Brief . . .

• **Biggest union?**—The International Brotherhood of Teamsters is now the largest union in the world, according to union President James Hoffa. Mr. Hoffa reported last week that the union gained 23,031 members during the past year, making the total membership 1,700,992.

• **Minimum wages**—The U. S. Chamber of Commerce says an increase in the federal minimum wage would increase the outflow of gold because U.S. business costs would be increased, promoting investment in lower-cost overseas areas; inflation would result, making it more difficult for U.S. products to compete abroad.

• **Deferred increase**—Wages of more than 1,500 carpenters in western Washington will be increased on January 1 by 15 cents an hour—the last increase in a three-year pack between the union and management groups. New journeyman scale will be $3.53 plus 20% in fringe benefits.

• **Workmen's compensation** — Increases in workmen's compensation rates affecting construction have been granted or proposed in Georgia and Texas. Georgia's state insurance commissioner has authorized a 6.5% increase. The Texas State Board of Insurance has under advisement an actuarial recommendation that construction rates be increased 4.1%.

• **"Buy Canadian"**—The steelworkers union in Vancouver, B. C., has sent telegrams to the federal and provincial governments asking for legislation banning use of foreign-made steel in Canadian public works projects if the steel product required by specifications is manufactured domestically.

• **Political action** — The teamsters union claims that its political organization, known as DRIVE, scored a "major success" in the November election. It says it outdid the AFL-CIO's political arm, called COPE, by a margin of 58.8% to 53.5% in the number of supported candidates who won.

# Truck Owners Fight AGC Agreement

Owner-drivers of dump trucks in southern California are fighting what they describe as efforts by big contractor groups and the teamsters union to force them into joining the union.

The California Dump Truck Owners Association is starting legal action in a state court in San Francisco to restrain the teamsters union and the Northern and Central California Chapter of Associated General Contractors from enforcing their recently negotiated labor contract affecting owner-operators.

The contract requires that owner-operators be carried on the payrolls of employers as drivers. Purpose, according to the agreement, is "to assure the payment of wages, fringes and conditions" called for in the contract.

The Truck Owners Association says the contract marks the first time that the union has been successful in a campaign to organize owner-drivers in the construction industry. It claims that the contract, if enforced, will eliminate the status of owner-operators as independent businessmen.

At present, dump truck owners operate under permits issued by the California Public Utilities Commission, which sets minimum rates. If the rates continue to apply, the association contends, the added contract costs will make the cost of using owner-operators prohibitive. And if the rates no longer apply as a result of the operators' demotion to "employees," it argues, destructive price cutting will follow, because the contract allows contractors and operators to set the compensation for equipment by mutual agreement.

A spokesman for the teamsters negotiating committee said last week that there are 6,000 construction teamsters in the 46 northern California counties and that 1,000 of them are owner-operators.

He described CDTOA as a job broker and said a contractor could go to the association under the old system "and get 30 owner-operators on a job without even looking at the union." The operators, he continued, became "tools" of the contractor, were not carried on the payroll and received neither fringe benefits nor overtime pay. "The members," he added, "were getting to feel that you had to buy a truck to get a job and decided it was time to write down the conditions of work for owner-operators."

The teamster spokesman said a similar kind of contract negotiated some years ago by the Central State Conference of Teamsters has twice been upheld by the Supreme Court. Those who are attacking the new contract, he predicted, are "wasting their time."

Circumstances surrounding the negotiation of the contract indicate that the AGC entered into it reluctantly. The union's initial demands for such a contract go back to 1957. They were followed by an ultimatum for an agreement by May 1, 1960. Yet several months elapsed, during which the AGC was vulnerable to a strike, before the new contract was finally signed.

An AGC spokesman said that as a matter of principle, "We are certainly against any agreement which infringes the right of a man to go into business for himself, even if it means going broke." But he questioned the wisdom of using taxes and subsidies to keep marginal operators in business.

A spokesman for the group opposing the contract said he hopes the court action will prevent a change from the commission minimum rate arrangement. A departure from that arrangement, he predicted, would "be harmful not only to truck owners, but would also create transportation problems for the construction industry and the general public."

Basis of the injunction action, according to the association spokesman, is a legal principle that two parties cannot collaborate to injure a third party. One of the contentions is that the owner-operators in the union were not consulted and that they overwhelmingly oppose this type of contract. Over 95% of those polled in statewide surveys conducted during the last two years, it is claimed, are against it.

A union spokesman said the agreement was duly negotiated by a committee representing all the members, including truck owners. The signatory union group is the Heavy, Highway, Building and Construction Teamsters Committee for Northern California.

# Ten-Point Code Is Strengthened

The Carpenters District Council of Madison County (Ill.) and Vicinity and three contractors groups in the East St. Louis area have incorporated the construction industry's 10-point work practices code in their new, three-year labor contract.

Violation of the code is made a breach of contract, rendering the entire contract null and void. The new provision is binding on subcontractors as well as on signatory contractors.

John C. Fallon, executive director of the Council of Contractor Associations for the East Side Industrial District of St. Louis, said last week that this is believed to be "the first contract in this metropolitan area that contains so firm and specific a guarantee of joint effort to attain maximum construction efficiency on the part of both the craft union involved and the contractors and subcontractors with whom the union works."

The 10-point code seeks to eliminate wasteful work practices. It was adopted as a policy statement by general presidents of the AFL-CIO building trades unions in Miami, Fla., in February, 1958.

Later that year, labor and management in East St. Louis became the first to adopt the statement by formal agreement at the local level.

The local agreement adopted the 10-point code in toto but supplemented it in three respects:

- Disagreements over interpretation or application of the code will be referred for settlement first to the international president of the union concerned and, failing that, then to the Executive Council of the Building and Construction Trades Department.
- Contractors are required to submit all jurisdictional disputes to the National Joint Board and they must bind their subs to do the same.
- Until the teamsters return to the AFL-CIO, all teamster disputes must be processed by whatever settlement machinery is available.

It is this 1958 agreement that has been incorporated by reference into the new contract with the carpenters and to which the breach of contract penalty provisions have been added.

The 1958 agreement runs to January, 1961, and contains an automatic renewal clause. It has been successful so far. A professional survey made for the St. Louis Chamber of Commerce last year disclosed that construction labor costs in the area dropped as much as 20% after the agreement was signed.

The success of the program, coupled with the new teeth given it in the carpenters' contract, is expected to produce more construction work in the area.

"It will encourage the many industries in our industrial district to continue to expand here," Mr. Fallon said, "and it will also make the district more attractive to companies looking for new plant locations and concerned with finding an area where construction costs will be reasonable."

The contractor groups who are parties to the carpenter contract are the Construction Employers Council of the Alton-Wood River District, the Southern Illinois Builders Association, which is a chapter of Associated General Contractors, and the Collinsville Contractors Association.

## Construction Heads List In Deferred Wage Boosts

Deferred wage increases scheduled for the construction industry next year will be higher and more numerous than those that will occur in any other industry.

The median increase for construction workers will be 14.3 cents an hour, according to the Bureau of National Affairs, Inc. BNA has analyzed more than 1,900 increases due in 1961 to determine their size and the industries in which they are booked.

The deferred increases are expected to have a strong influence on 1961 bargaining. In many cases, BNA reports, they may virtually establish a settlement "floor."

Over half of the 1961 automatic increases analyzed in the construction industry will range from 10 to 15 cents an hour, and nearly a fourth of them, BNA finds, will be for more than 15 cents.

For all industries, the average of 1961 deferred increases will be slightly over eight cents an hour, which is a little bigger than the average for this year. Smallest increases scheduled for 1961 were found in the aircraft, apparel, leather, paper, petroleum, rubber, textile and service industries.

Fringe benefits will also be increased automatically in many cases next year, according to BNA. Pension and insurance benefit changes will be the most common.

The prevalence of deferred wage increases is the result, of course, of long-term labor contracts. BNA reports that the trend toward contracts spanning more than a year continued this year. Long-term agreements have resulted in about 49% of the 1960 settlements.

# OFFICIAL PROPOSALS

Bids: January 10, 1961

### *Intake Works and Outlet Works of the West Delaware Tunnel Contracts 456 and 457*

SEALED BIDS will be received by the Board of Water Supply at its offices, thirteenth floor, 120 Wall Street, New York 5, N. Y., until 11:00 A.M. Eastern Standard Time, on Tuesday, January 10, 1961, for the following two contracts for the construction of the Intake Works and the Outlet Works of the West Delaware Tunnel, all as set forth in the specifications:

Contract 456, for the construction of the Intake Works of the West Delaware Tunnel, including a road to the intake chamber; for installation of equipment; for stream control; and for other appurtenant work. The site of the work is about one mile east of the hamlet of Cannonsville, in the town of Tompkins, Delaware County, New York.

Contract 457, for the construction of the Outlet Works of the West Delaware Tunnel, including the installation of a steel interlining at the outlet end of the tunnel; for the installation of equipment; and for other appurtenant work. The site of the work is about 1¼ miles east of the hamlet of Grahamsville, in the town of Neversink, Sullivan County, New York.

A bidder on both of these contracts may, if he so desires, specify in the bid form of either or both contracts that he will agree to make a percentage reduction from the total cost of the contract, if both contracts are awarded to him.

Contract pamphlets can be obtained in the Secretary's office, Room 1312, at the above address, upon application in person or by mail, by depositing the sum of $10.00 for a set of pamphlets for each contract. There will be a charge of $2.60 to cover mailing costs for each set of contract pamphlets.

Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars apply at the office of the Chief Engineer at the above address.

ARTHUR C. FORD, President, EDWARD C. MAGUIRE, HERBERT M. ROSENERG, Commissioners; Board of Water Supply; BETTY COHEN, Acting Secretary.

### U. S. Government

District of Columbia—Highway Construction—Dept. of Hwys. & Traffic, D. C., Nov. 25, 1960. SOUTHWEST FREEWAY—INNER LOOP GRADING BETWEEN STATION 105 PLUS 00 AND STATION 124 PLUS 00 INCLUDING BRIDGE AT SEVENTH ST., FEDERAL AID INTERSTATE PROJECT I-95-1(22)1—Invitation C-6155-H, consisting of 138,600 cu. yds. unclassified excavation; 460,800 lbs. reinforcing steel; 567,400 lbs. structural steel; 5,946 cu. yds. BB substructure concrete; 22,757 cu. ft. stone masonry facing, and 15,534 cu. ft. Class A dimensioned masonry. (Wage rates have been predetermined by the Labor Dept.) Bid forms, plans and specifications are now available from Supervisor, Bid & Contract Division, Procurement Office, D. C., Room 404, 499 Pa. Ave., N.W., upon deposit of a certified check for $50.00 per set, payable to D. C. Treasurer (Phone NA 8-6000, Ext. 2378). SEALED BIDS to be opened 3:00 PM, EST, Dec. 20, 1960, in Room 424, 499 Pa. Ave., N.W.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-5455) will be received at Denver, Colorado, until 2 p.m., Mountain Standard Time, January 12, 1961, for furnishing four (4) 156-inch Butterfly Valves with Operating Units, Handling Equipment and Bed Plates for Clear Creek and Spring Creek Powerplants, Central Valley Project, California. Delivery is desired within 420 days. For Particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

**Read the Official Proposal Column of**
**ENGINEERING NEWS-RECORD**
**This Week and Every Week**

# OFFICIAL PROPOSALS

*RATE:* The rate for Official Proposal advertising is $2.70 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

*CLOSING DATE:* Friday 10:30 A.M. for issue dated the following Thursday.

*SEND COPY TO:* Official Proposal Division,
Engineering News-Record
Class. Adv. Div.,
P. O. Box 12, N. Y. 36, N. Y.

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Bids: December 26, 1960

## Notice to Contractors

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 a.m. Eastern Standard Time, on December 22, 1960, by Henry A. Cohen, Director, Bureau of Contractors, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON OGDENSBURG PORT DEVELOPMENT, MADDEN DOCK VICINITY AREA TO FISH HATCHERY VICINITY AREA, PROJECT NO. 6057, ST. LAWRENCE COUNTY, WHICH CONSTITUTES CONTRACT SPEC. NO. SM-177.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, New York.
(b) Mr. Robert W. Sweet, District Engineer, New York State Department of Public Works, 444 Van Duzee Street, Watertown, New York.
(c) Mr. William Mende, Principal Building Construction Engineer, Department of Public Works, 270 Broadway, New York, City.

The deposit for a set of plans, specifications and proposal forms is $5.00. Refunds of deposits for plans, specifications and proposals will be made *only* in case the deposits of individual sets are $10.00 or more, per Chapter 835, Laws of 1960.

The Engineer's Estimate of cost for this work is $26,625.00.

Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $1,500.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidder."

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPERINTENDENT OF
PUBLIC WORKS

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Bids: December 22, 1960

## Notice to Contractors

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 a.m. Eastern Standard Time, on December 22, 1960, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON INTERSTATE ROUTE 570-1, FORMAN AVENUE TO ERICKSON STREET, NEW PROJECT NO. 1-690-3(1)214, ITEM 57B, CITY OF SYRACUSE, ONONDAGA COUNTY, WHICH CONSTITUTES CONTRACT SPEC. NO. FA-SM-176.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, New York.
(b) Mr. Earl E. Towlson, District Engineer, New York State Department of Public Works, 333 East Washington Street, Syracuse, New York.
(c) Mr. William Mende, Principal Building Construction Engineer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. Refunds of deposits for plans, specifications and proposals will be made *only* in case the deposits of individual sets are $10.00 or more, per Chapter 835, Laws of 1960.

The Engineer's Estimate of cost for this work is $16,175.00.

Proposal for this contract must be submitted in separate sealed envelope with the name of contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $1,000.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidder."

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPERINTENDENT OF
PUBLIC WORKS

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Bids: December 28, 1960

## Water Main Extensions Potomac Water System

## Project 28

## Barkley Drive-Guinea Road Water Main

FAIRFAX COUNTY WATER AUTHORITY
ANNANDALE, VIRGINIA

Sealed proposals will be received by the Fairfax County Water Authority at the office of the Authority, Room 107, 4121 Chatelain Road, Annandale, Virginia, or by mail addressed to the Authority, P. O. Box 91, Annandale, Virginia, until 3:00 P.M., Eastern Standard Time, December 28, 1960, at which time they will be publicly opened at the office of the Authority and read aloud, and contracts awarded as soon thereafter as practicable for the construction of water mains in the vicinity of Annandale, Fairfax County, Virginia.

The work comprises furnishing and installing approximately 16,981 linear feet of 12-inch, 1,109 linear feet of 8-inch, and 1,898 linear feet of 6-inch cast iron pipe water main, including fittings, valves, hydrants, one highway crossing and two meter vaults.

The Instructions to Bidders, Proposal, Agreement, form of Bid Bond, Performance Bond, Plans and Specifications for the work may be examined at the office of the Authority. Copies of the Plans and Contract Documents may be obtained upon the deposit of $25.00 for each set, to be refunded upon return of such set in good condition within 10 days after the opening of bids.

Each proposal must be accompanied by a bid bond or a certified check on a solvent bank or trust company, made payable to the Fairfax County Water Authority in the amount of not less than five percent of the total bid, as assurance that the bid is made in good faith.

Bidders must be registered as Contractors in the Commonwealth of Virginia, as provided by Chapter 7 of Title 54 of the Code of Virginia of 1950.

The Fairfax County Water Authority reserves the right to waive any informalities in or to reject any or all bids and to accept the bid which it deems most favorable to the interests of the Authority after all bids have been examined and canvassed.

FAIRFAX COUNTY WATER
AUTHORITY
By James J. Corbalis, Jr.
Engineer-Director

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Bids: January 18, 1961

## Sewage Treatment Project City of Lebanon Authority

Lebanon, Pennsylvania

Sealed proposals for separate Contracts stated below will be received by CITY OF LEBANON AUTHORITY at the Office of the City Engineer, City Hall, Lebanon, Pennsylvania, until 2:00 P.M., Eastern Standard Time, January 18, 1961, and shortly thereafter, the same day, they will be publicly opened and read, at City Hall in the Council Chambers.

Proposals will be for furnishing all necessary labor, materials, and equipment, and performing all work of the separate Contracts. Each proposal shall be accompanied by a certified check or bid bond in an amount not less than ten (10) percent of the bid total, all in accordance with the Contract Documents.

Copies of the Contract Documents, including Drawings and Specifications, will be on file (for inspection purposes only) at the Office of the City Engineer.

They may also be seen at the office of Gannett Fleming Corddry and Carpenter, Inc., Engineers, 600 North Second Street, Harrisburg, Pa., from whom only they may be obtained, upon deposit of the following indicated amounts per set. Not more than two (2) sets of any particular Contract will be permitted a prospective bidder. Checks shall be made payable to Gannett Fleming Corddry and Carpenter, Inc.

Contract One:
GENERAL CONSTRUCTION OF SEWAGE TREATMENT PLANT. $65.00
Contract Two:
PLUMBING WORK IN CONNECTION WITH CONSTRUCTION OF A SEWAGE TREATMENT PLANT .......................... $30.00
Contract Three:
HEATING WORK IN CONNECTION WITH CONSTRUCTION OF A SEWAGE TREATMENT PLANT .......................... $40.00
Contract Four:
ELECTRICAL WORK IN CONNECTION WITH CONSTRUCTION OF A SEWAGE TREATMENT PLANT .................. $50.00

Full refund will be made only to actual bidders on the Contracts stated above, for return of one (1) set, no more, of a particular Contract in good condition within fifteen (15) calendar days after bid opening; refund for return of all other sets within the same period will be fifty (50) percent of deposit. No refund will be made for Contract Documents returned later than fifteen (15) calendar days after bid opening.

Gannett Fleming Corddry
and Carpenter, Inc.,
Engineers

CITY OF LEBANON AUTHORITY
Lebanon, Pennsylvania

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### U. S. Government

Sealed bids will be received in the office of the office of the Engineering and Construction Director, Panama Canal Company, Balboa Heights, Canal Zone, until 1:00 P.M., EST December 28, 1960 at which time they will be publicly opened for the following: Construction of up to 100 duplex apartments consisting of two, three and four bedroom units, constructed of either poured concrete, precast concrete, or concrete block. Work also includes necessary grading, roads, and systems as follows: water, electrical, telephone, sanitary sewer, and storm drainage. Plans and specifications available for examination in Procurement Office, Panama Canal Company, 21 West St., New York 6, N. Y. Complete sets of data may be obtained upon payment of $50.00 deposit For further information contact this office. Telephone BOwling Green 9-5380, extension 73. Reference: PC 61-32.

Bids: January 12, 1961

### County of Suffolk, New York Department of Public Works, Yaphank, New York

Sealed proposals will be received until 11:00 A.M., Prevailing Time, on January 12, 1961, at the office of H. F. Bishop, Commissioner of Public Works, Yaphank Avenue, Yaphank, New York, at which time they will be publicly opened and read for the construction of:

FROWEIN ROAD, C. R. 98
in
TOWN OF BROOKHAVEN, SUFFOLK COUNTY, NEW YORK

Length of contract: 3.28 Miles
Width of Pavement: 22 ft. and variable
Type of Construction: 2½" Asphalt Concrete top course, 6" Penetration Macadam on 6" Stabilized Soil Base, Surface Treatment of intersecting roads and shoulders with Bituminous Material, Excavation and Grading for Pavement and Structures, Construction of Miscellaneous Structures and Drainage.

Maps, plans, and specifications may be examined and obtained at:

Department of Public Works
H. F. Bishop Commissioner
Yaphank Avenue, Yaphank, New York

The deposit for a set of plans, specifications and proposal forms is $30.00. A refund in full will be made to BIDDERS for return of ONE set of plans and specifications in good condition within thirty (30) days of award or rejection of Bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's Estimate of cost for this work is $640,000.00.

Proposals for this contract must be submitted in a separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check payable to the order of the COUNTY OF SUFFOLK, for the sum of $32,000.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law as set forth in "Information for Bidders."

The right is reserved to reject any and all bids.

H. F. BISHOP
Commissioner of Public Works
County of Suffolk
Yaphank Avenue, Yaphank, N. Y.

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Bids: January 24, 1961

### Spruce Run Reservoir Project Spruce Run Dam, Dikes and Appurtenant Works—Contract SR-1

SEALED BIDS will be received from bidders by the Department of Conservation and Economic Development, at its offices, first floor, 205 West State Street, Trenton, N. J., at 11:00 A.M. Eastern Standard Time, on Tuesday, January 24, 1961 and will be opened and read immediately thereafter, for Contract SR-1 for the construction of the Spruce Run dam, dikes A and B, spillway weir and channel, outlet tower and outlet works, gaging weir, access roads and final grading in vicinity of dam, installation of equipment and other appurtenant work, all as set forth in the specifications. The Spruce Run dam will be approximately 6000 feet in length along the top, will have a maximum height of about 83 feet and will be constructed of earth compacted by rolling. The limestone foundations under the dam, dikes and certain zones on the perimeter of the reservoir will be grouted as specified. The work is located near the Town of Clinton, Hunterdon County, New Jersey. Bids will be accepted only from bidders prequalified with the Department of Conservation and Economic Development in accordance with R.S. 52:35.

The bid, accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey in an amount not less than 2 percent of the bid, an Agreement of Surety, an Affidavit of Non-Collusion, the name and address of the prequalified subcontractor to do the grouting, drilling, core boring and sampling, an Appointment of Agent by Non-resident Bidders and a revised Financial Statement and Plan and Equipment Statement on prequalification forms, must be enclosed and sealed in an envelope provided for that purpose by the Department. Bids not so submitted will be rejected. Bids must be delivered at the above place on or before the hour named, as no bids will be accepted after the hour specified.

Contract pamphlets containing information for bidders, forms of bid and contract, specifications, requirements as to surety and subcontractor for grouting etc., and separate folders of contract drawings can be obtained in the office of the Chief Construction Engineer of the Bureau of Design and Construction of the Division of Water Policy and Supply of the Department of Conservation and Economic Development, 219 West State Street, Trenton, N. J., upon application in person or by mail, by depositing the sums of $15.00 for each contract pamphlet and $10.00 for each folder of contract drawings. The deposit for the contract pamphlet will be refunded within 30 days of the award of contract upon the return of such document in good condition without written entries. Deposit will not be refunded for the folder of contract drawings. For further particulars apply to the office of the Chief Construction Engineer.

The Commissioner reserves the right to select the bid, the acceptance of which will be most advantageous to the State, price and other factors considered. Any and all bids may be rejected when the Commissioner determines that it is in the public interest so to do.

Salvatore A. Bontempo
Commissioner of Conservation
and Economic Development

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Bids: January 6, 1960

NOTICE

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| New Bid Date: | January 6, 1961 |
| Original Bid Date: | December 6, 1960 |

### Feeder Road Program

MINISTRY OF PUBLIC WORKS
REPUBLIC OF EL SALVADOR
BIDS: JANUARY 6, 1961
NOTICE TO CONTRACTORS

The Ministry of Public Works of the Republic of El Salvador advises that on January 6, 1961, bids will be received for the construction of a major portion of the proposed Feeder Road Program of the Country. The Specifications, Plans and Contract Documents have been for sale in El Salvador since October 31, 1960.

All Contractors interested in taking part in this bidding are requested to obtain the necessary Documents, Plans and Specifications from the Office of the Proveeder Especifico de Obras Publicas, Edificio Morazan, 8ª C. P., San Salvador, El Salvador, C. A. All requests must be accompanied by a certified check in the amount of Sixty Dollars ($60.00) which will not be returned.

MINISTRY OF PUBLIC WORKS
REPUBLIC OF EL SALVADOR,
C. A.

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Bids: January 12, 1961

### The Port of New York Authority

Sealed proposals for the following work will be received at the Office of the Chief Engineer, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on date indicated, at which time said proposals will be opened and read in Room 1108.

Contract NYA-140.046—New York International Airport—Building No. 147—Paving and Utilities—Deposit $30.00 per set of documents—Bids will be received until 2:30 P.M. on Thursday, January 12, 1961.

Contract LGA-270.013—La Guardia Airport—Alterations to Proprietary Fire Alarm System—Deposit $30.00 per set of documents—Bids will be received until 2:30 P.M. on Thursday, January 12, 1961.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design, Room 1115, 111 Eighth Avenue, New York 11, N. Y. Documents will be furnished upon receipt of the above deposit (each set including one copy of the Contract Drawings) for not more than three sets to any one company. Additional sets will be furnished upon payment of an amount for each equal to the deposit indicated above, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115 where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman
New York, December 15, 1960

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## U. S. Government

DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION. Sealed bids (Specifications No. DC-5454) will be received at Huron, South Dakota, until 10 a.m., Central Standard Time, January 12, 1961, for furnishing labor and materials for Second Circuit Additions to Fort Thompson-Huron-Watertown, Fort Randall-Sioux City, and Fort Randall-Fort Thompson 230-kilovolt Transmission Lines, Transmission Division, South Dakota, Missouri River Basin Project. Principal items are 130 miles of line—Furnishing and stringing three 954,000 circular mil, 54/7, ACSR conductors; 206.86 miles of line—Furnishing and stringing three 1,113,000 circular mil, 45/7, ASCR conductors; and other work. Completion time 510 days. For particulars, address Bureau of Reclamation, P. O. Box 2553, Billings, Montana; P. O. Box 825, Huron, South Dakota; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-5456) will be received at Denver, Colorado, until 2 p.m., Mountain Standard Time, January 17, 1961, for furnishing two (2) 158-inch Butterfly Valves with Operating Units, Handling Equipment and Bed Plates for Trinity Powerplant, Central Valley Project, California. Delivery is desired within 360 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

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## OFFICIAL PROPOSAL ADVERTISERS

*PLEASE TAKE NOTE*

## HOLIDAY CLOSING DATE

Jan. 5 issue closes Dec. 28
(10 A.M.)

New Rate $2.70
a line per issue.

(Effective January)

# EMPLOYMENT NATIONAL COVERAGE OPPORTUNITIES

**DISPLAYED RATE**

The advertising rate is $45.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

**JANUARY 5TH ISSUE CLOSES DECEMBER 22ND**

**UNDISPLAYED RATE**

$2.70 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take 1/2 of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to agency Commission.

*Send NEW Ads and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36*

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*ADDRESS BOX NO. REPLIES TO: Box No.*
*Classified Adv. Div. of this publication.*
*Send to office nearest you.*
*NEW YORK 36: P. O. Box 12*
*CHICAGO 11: 520 N. Michigan Ave.*
*SAN FRANCISCO 4: 68 Post St.*

## • POSITIONS VACANT

**Estimator — For established contractor in** Deep South Metropolitan area, specializing in Heavy Construction, Foundations and Sewer and Water Plants. Graduate Civil Engineer, Age 30 to 38 preferred. P-5645, Engineering News-Record.

**Wanted—Engineers competent to design** and prepare plans for Sewage Treatment Plants. State age, experience, salary requirements, when can report, references. Position permanent. P-5717, Engineering News-Record.

**Lead Draftsman—Concrete Reinforcing Steel** Engineering Dept. Should have 5 yrs. experience in detailing Reinforcing Steel. Experience in estimating and sales also desirable but not necessary. Salary open. Write: Phoenix Manufacturing Co., Division of Union Tank Car Company—Attn: Mr. C. E. Hunt, P. O. Box 1207, Joliet, Illinois.

**Draughtsmen to become part of expanding** organization; competent, experienced with engineering work including reinforced concrete, piping and equipment. Also C.E. graduate to assist draughtsmen with layout of sewage treatment works. Supply samples of work and brief resume of experience—Lewis E. Kohl, Inc., 16 State Street, Rochester, N. Y.

**Civil Engineer I—for City Engineers Department**, Salary Range $440-$550 per month. Graduate Engineer with Sewer Design Experience preferable, however all types of experience will be considered. Apply, City of Fort Lauderdale, Civil Service Department, P. O. Box 1181, Fort Lauderdale, Florida.

**Engineering Supervisor—$690-$875, age 25** to 55. Under general direction is responsible for highway design, including urban streets, freeways and expressways. This may include assignment to three member Planning-Traffic Civil Engineer team. Applications are also sought for other equivalent civil engineer assignments. Considerable professional civil engineering experience including supervisory experience and have Civil Engineering degree. Be registered or eligible to be registered as Civil Engineer in the State of Arizona. Must be registered within one year after appointment. Traffic Engineering Supervisor—$690-$875, age 25 to 55. Under general direction is responsible for supervising the planning and operational traffic engineering programs of a rapidly developing central city. Assignment may be to three member Planning-Traffic-Civil Engineer team. Considerable professional traffic engineering experience, including supervisory experience, degree in engineering, supplemented by courses in traffic engineering. Registered or eligible to be registered as a professional engineer in the State of Arizona. Must be registered within one year after appointment. Apply to Leroy J. Brenneman, Personnel Director, 324 W. Washington, City of Phoenix, Arizona, by January 15, 1961.

(Continued on the following page)

***When answering***
**BOX NUMBERS . . .**

**to expedite the handling of your correspondence and avoid confusion, please do not address a single reply to more than one individual box number. Be sure to address separate replies for each advertisement.**

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## CHEMICAL OR MECHANICAL ENGINEERS

One of the world's largest pharmaceutical companies has available varied and challenging assignments in Plant Engineering. About five years' experience required in the process industries. Applicants should be capable of assuming full responsibility for project design and coordination. Knowledge of construction methods and chemical maintenance desirable.

**Send resume to Personnel Dept.**

**Parke, Davis & Company, Detroit 32, Mich.**

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## Department Head
## FOREIGN OPERATIONS

Excellent opportunity for person with senior experience in management of large diversified foreign operations to head new department of expanding general contractor. Immediate opening.

Please submit a concise resume including previous experience and salary requirements.

*Director of Personnel*

BLOUNT BROTHERS
Construction Co.
Home Offices: 79 Commerce Street
Montgomery, Alabama

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## CIVIL ENGINEERS

**Civil Engineers with 2 to 15 years of experience in layout and design of dams, intakes, powerplants, spillways, canals, etc., to fill immediate openings in a design office. Some experience in writing reports desirable but not essential. Please send complete resume to Personnel Manager.**

**HARZA ENGINEERING COMPANY**
**400 West Madison Street, Chicago 6, Illinois**

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## DISTRICT REPRESENTATIVE

**Experienced DR needed for Midwest to promote small and medium sized equipment line. Minimum three years current experience. Submit resume to:**

**RW-5731**, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

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## CIVIL ENGINEERS

### *Overseas Opportunity*

For graduate civil engineer on a multi-purpose dam project in Thailand, who has a minimum of five years experience on arch dams, large excavations, mass concrete placement, structural concrete work, penstock steel fabrication and erection.

Successful applicant must pass physical examination and security investigation.

- **24 Month Contract**
- **Completion Incentive**
- **Living Quarters**
- **Excellent Vacation Allowance**
- **Medical Care & Insurance**
- **Overseas Bonus**

*Only complete resumes which include salary information will be considered.*

**SVERDRUP & PARCEL**
**ENGINEERING COMPANY**
**915 Olive Street, St. Louis 1, Mo.**

## HIGHWAY and BRIDGE ENGINEERS

**Permanent positions available for graduate Civil Engineers with a minimum of five years' experience in Highway, Drainage, or Bridge Design.**

**Company benefits include hospitalization, insurance, sick leave and vacation.**

**Send complete resume, references and salary requirements to**

**RACKOFF ASSOCIATES**
**1033 W. Third Avenue, Columbus 12, Ohio**

### • *POSITIONS VACANT*

(Continued from preceding page)

**Building Construction Superintendents and** Construction Estimators. Positions open now—send resume to: Personnel Department, Box 236, Gouverneur, New York.

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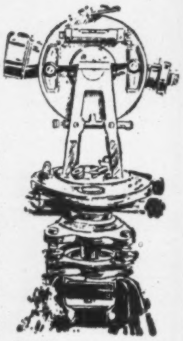

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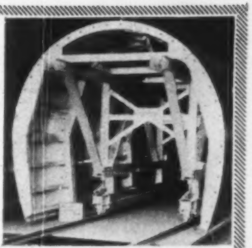

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# Editorials

## Leave It in the Family

UNNECESSARY ROUGHNESS is what we called the Congressional investigation of the Port of New York Authority when it began. So it has been. The hearings conducted thus far have been rough on both the investigated and the investigators. And for what they have produced so far that is of basic concern to the Congress of the United States, they have been unnecessary.

This is not to say that the Port of New York Authority—builder and operator of great bridges, tunnels, airports, piers and terminals—is above investigation. Far from it. This bi-state agency is too big, too powerful, to go uncontrolled. There must be a higher authority than the Authority. Employees of such an agency must not be allowed to forget that their jobs were created by the voters of New York and New Jersey; theirs is a public agency answerable to residents of the two states. The fact that they build with money borrowed from private sources and secured by income from users rather than taxpayers does nothing to lessen their responsibility to the public. With their toll-taking monopolies and partially subsidized enterprises theirs is an especially heavy duty to serve the public—and serve it well.

However, the primary authority over this Port Authority lies—as with parents over children—in the states that conceived it and brought it into existence. The role of the Congress at the time of the bi-state agency's birth was that of the godfather who must give the newborn his blessing; that ends his official function unless the parents fail in the upbringing.

We see nothing seriously wrong with the Port of New York Authority as it has grown up—its personnel, its operations or its projects—that the states of New York and New Jersey cannot control or correct if they're of a mind to. There has been no serious parental neglect. Neither do we see any neglect of the public on the Authority's part that the public can't correct by reminding the Authority of who is the boss. We do not see that a Congressional investigation, complicated by personal vendetta, is called for. In fact, the taxpayers in states outside New York and New Jersey should no more be paying for this Congressional investigation than friends of the family should get into the disciplining of a child of capable parents. It's a family affair for the two states, the Authority and the public.

## Speaking of Public Relations

"WE ARE SPENDING PUBLIC MONEY. We are making public policy. Our work, therefore, should always be carried on with a full respect for the public's right to know what we are doing, and why we are doing it."

Those are the ringing words of John C. Mackie, Michigan State Highway Commissioner and the nation's only publicly elected chief highway administrator (ENR Sept. 22, p. 183). Mr. Mackie goes on:

"Open access to public information therefore is more than just a desirable goal in a democracy. It is the right of people in a democracy.

"We are determining for a long time to come where people will live, where they will work, where they will spend their money, where they will go to school. Our work directly affects the lives and welfare of whole communities . . .

"We exercise this power as a public trust. The public will support us when we are right. The public will rightly deny us support when we are wrong. Let's keep open the doors to public information so that the public's judgment can be fairly based on the facts . . ."

Seldom has the public's "right to know" been defended more eloquently or the obligation of every public agency to inform its public stated more clearly.

These are not idle theories with Mr. Mackie, whose organization does an outstanding job of public relations. His professionally staffed Department of Public Information has developed a close and enviable relationship with news media in his state and beyond. And his policies pay off in a high level of public understanding of Michigan's highway program.

Mr. Mackie's philosophy might well be adopted and implemented by every agency and individual concerned with the highway program. In fact, it should be the philosophy of all public or quasi-public agencies.

An informed public will—we believe—lend its support to the worthwhile objectives and notable accomplishments of all public agencies. An uninformed public may not only fail to support such agencies but may—through its elected representatives—obstruct or prevent their worthwhile programs.

The public has the right to know.

## Signals Off: It's One Z

BACK IN MAY, on this page, we bemoaned the fact that the Narrows Bridge, being built across the entrance to the Port of New York, was stuck with the official name Verrazzano-Narrows Bridge. It's bad enough that hardly anybody remembers that Giavanni da Verrazzano explored these waters in 1525. Use of his name for the bridge is further complicated by the fact that the experts can't agree on how many Z's to put in the word.

In May it was two Z's, on the authority of local historians. Now the one-Z school has brought the Triborough Bridge and Tunnel Authority to reletter its sign at the jobsite. Moreover, there's question whether that second R really belongs.

We don't think VerraZano belongs (nor VeraZZano, nor VeRazano, for that matter.) Maybe the confusion over the Z's will result in this great structure being called the Narrows Bridge, as it was in the beginning.

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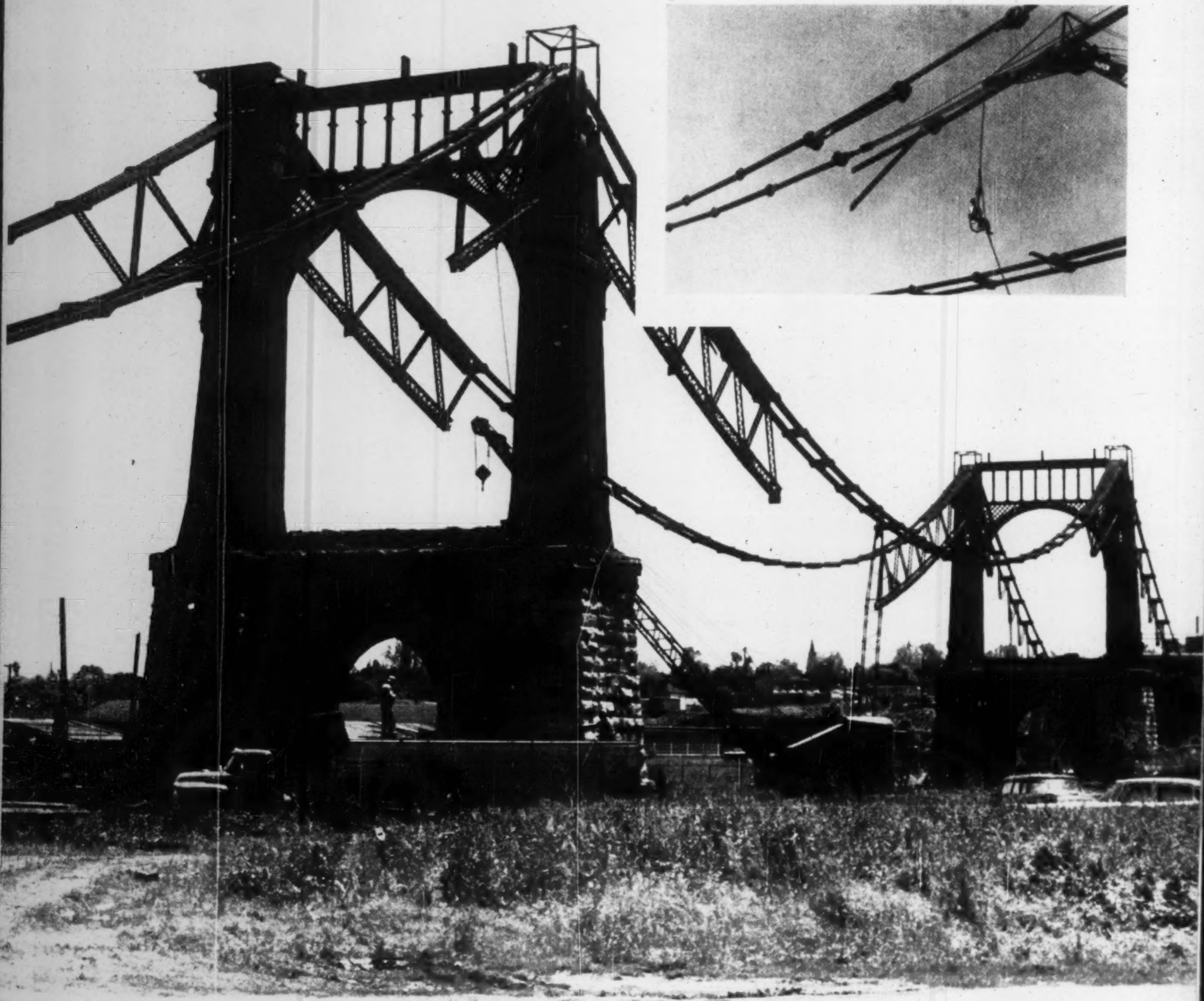

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